GRADUATE SCHOOL
2020-2021
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About Marquette University

From the President

At Marquette University, the entire community is dedicated to the academic success and personal growth of our students. The university’s commitment to academic excellence is complemented by a grounding in the centuries-old Jesuit concept, cura personalis, which calls us to appreciate and respect the individual hopes, desires, aspirations and concerns of all members of the Marquette community.

In this spirit, this bulletin has been created to guide you in planning your academic career and professional development. With its descriptions of academic majors and required courses, study abroad opportunities, services for students and policies, it is a resource to help you choose the path at Marquette that best suits you, fosters your growth and prepares you for the challenges, rewards, leadership and service that await you when you complete your work here. Use it in the spirit of Father Jacques Marquette, the 17th century Jesuit explorer for whom our university is named. Let his embrace of the unfamiliar, his openness to new opportunities and his strong sense of purpose inspire you as you explore the offerings of this outstanding university.

You have my prayers that our loving and gracious God will bless you in your academic work at Marquette.

Michael R. Lovell, Ph.D.
President

From the Provost

A Marquette education goes beyond the educational foundation your courses provide. Your time at Marquette will be more than an education. You will receive the guidance of faculty who are experts in their field and who truly believe in the teacher-scholar model, as well as leadership opportunities in service learning and student organizations. It will be an experience that we hope transforms you into men and women who seek answers to life’s deepest questions and contribute to solving the world’s most pressing problems.

This bulletin can serve as a roadmap for your time here at Marquette. It describes the range of majors and courses Marquette offers, graduation requirements, academic policies and procedures, and experiential learning opportunities that exist both inside and outside of the classroom. I hope you find it a helpful resource as you register for classes and plan ahead for future semesters.

Our faculty and staff are here to help guide your growth intellectually, emotionally and spiritually during your time at Marquette. They are a valuable resource, and I encourage you to seek their advice and listen to their perspectives gleaned from years in their respective fields. Your time on campus offers you the opportunity to engage in meaningful dialogue and, in the spirit of Ignatian reflection, learn from this engagement.

The Marquette community is truly a family – one that extends beyond our campus community to the 100,000 alumni who lead and serve in the fields of law, engineering, business, medicine, education, dentistry, the humanities, social sciences and communication in all corners of the world. Our hope is that through your experiences here you will leave Marquette better than you found it. We know that you will contribute your unique gifts to enrich the diversity of our campus community and will go out into the world and be men and women for others.

Kimo Ah Yun, Ph.D.
Acting Provost

History

Marquette began as a dream of the Most Rev. John Martin Henni, the first Catholic bishop of Milwaukee, but it took a trip overseas to find an investor to make it a reality. Belgian businessman Guillaume Joseph DeBoey promised $16,000 for the proposed ‘academy of learning.’ It was hardly enough to fund the establishment of a college but just enough to keep Bishop Henni’s dream alive for the next eight years until he could purchase a parcel of land on a hill topping today’s North 10th and West State streets.

Nearly three decades passed before the doors of Marquette College, a small liberal arts school for men named after Rev. Jacques Marquette, S.J., opened on Aug. 28, 1881. Bishop Henni died just two days later, one might guess satisfied that his work was finished.

Throughout the years, thousands of students have passed through Marquette’s halls and classrooms, aspiring to achieve academic success and a spiritual foundation to last a lifetime.

Marquette was founded in the rich tradition of the Society of Jesus, a Catholic religious order established in 1540 by St. Ignatius Loyola. The university is named after Rev. Jacques Marquette, S.J. (1637-75), a French missionary and explorer in North America.

For more information please visit Our History (http://www.marquette.edu/about/history.php).

Mission Statement

Marquette University is a Catholic, Jesuit university dedicated to serving God by serving our students and contributing to the advancement of knowledge. Our mission, therefore, is the search for truth, the discovery and sharing of knowledge, the fostering of personal and professional
excellence, the promotion of a life of faith, and the development of leadership expressed in service to others. All this we pursue for the greater glory of God and the common benefit of the human community.

**Excellence**

Our students, whether traditional or non-traditional, undergraduate, graduate or professional, come to Marquette University to share our commitment to the pursuit of excellence in all things as a lifelong endeavor. They come to join a community whose members — faculty, staff, students, trustees, alumni and friends alike — believe that education must encompass the whole person: spiritual and moral as well as intellectual, the heart as well as the mind. And they come seeking the educational, professional and cultural advantages of a university located in the heart of the city. We, in turn, take seriously our responsibility to foster and support excellence in teaching and research, to keep a Marquette education accessible to a diverse population of students, and to offer personal attention and care to each member of the Marquette community.

**Faith**

As a Catholic university, we are committed to the unfettered pursuit of truth under the mutually illuminating powers of human intelligence and Christian faith. Our Catholic identity is expressed in our choices of curricula, our sponsorship of programs and activities devoted to the cultivation of our religious character, our ecumenical outlook, and our support of Catholic beliefs and values. Precisely because Catholicism at its best seeks to be inclusive, we are open to all who share our mission and seek the truth about God and the world, and we are firmly committed to academic freedom as the necessary precondition for that search. We welcome and benefit enormously from the diversity of seekers within our ranks, even as we freely choose and celebrate our own Catholic identity.

**Leadership**

As a Jesuit university, Marquette embodies the intellectual and religious traditions of the Society of Jesus. Through an academically rigorous, values-centered curriculum, our students receive a firm grounding in the liberal arts, preparation for work in a world of increasing complexity and diversity, and formation for life as ethical and informed leaders in their religious, cultural, professional and civic communities. They work with and learn from faculty who are true teacher-scholars, whose research not only advances the sum of human knowledge, but also informs their teaching, and whose commitment to students is fundamental to their intellectual and professional lives.

**Service**

Through both our academic and co-curricular programs, Marquette strives to develop men and women who dedicate their lives to the service of others, actively entering into the struggle for a more just society. We expect all members of the Marquette community, whatever their faith traditions, to give concrete expression to their beliefs by giving of themselves in service to those in need.

**Marquette University Guiding Values**

*Endorsed Dec. 8, 2014*

In accordance with the Catholic, Jesuit mission and vision of Marquette University, we hold that all people and things are created to praise, reverence and serve God in our community and throughout the world, and thus every aspect of the university’s lifblood and work holds this principle and foundation as its beginning and end. Therefore, we will enact the following values and behaviors in our lives and our work to serve the greater glory of God:

- Pledge personal and holistic development of students as our primary institutional vocation
- Pursue academic excellence and educate students who are men and women for and with others throughout the world
- Embody a spirit of interdisciplinary curiosity, research, innovation, entrepreneurship and application to change and improve ourselves, our community and our world
- Nurture an inclusive, diverse community that fosters new opportunities, partnerships, collaboration and vigorous yet respectful debate
- Live as servant leaders with a commitment to the Jesuit tradition and Catholic social teaching for all people, beliefs and faith traditions
- Create bold, ambitious plans enacted with agility, authentic accountability and a commitment to the greater good

**Vision Statement**

Marquette University aspires to be, and to be recognized, among the most innovative and accomplished Catholic and Jesuit universities in the world, promoting the greater glory of God and the well-being of humankind.

We must reach beyond traditional academic boundaries and embrace new and collaborative methods of teaching, learning, research and service in an inclusive environment that supports all of our members in reaching their fullest potential.

Marquette graduates will be problem-solvers and agents for change in a complex world so in the spirit of St. Ignatius and Jacques Marquette, they are ready in every way ‘to go and set the world on fire.’

**Statement on Human Dignity and Diversity**

As a Catholic, Jesuit university, Marquette recognizes and cherishes the dignity of each individual regardless of age, culture, faith, ethnicity, race, gender, sexual orientation, language, disability or social class. Precisely because Catholicism at its best seeks to be inclusive, we are open to all who share our mission and seek the truth about God and the world. Through our admissions and employment policies and practices, our curricular and co-
curricular offerings, and our welcoming and caring campus environment, Marquette seeks to become a more diverse and inclusive academic community dedicated to the promotion of justice.

Our commitment to a diverse university community helps us to achieve excellence by promoting a culture of learning, appreciation and understanding. Each member of the Marquette community is charged to treat everyone with care and respect and to value and treasure differences. This call to action is integral to the tradition which we share.

For more information please visit the Office of Diversity and Inclusion. (http://www.marquette.edu/diversity/)

Accreditation

An educational institution is only as strong as the level of excellence that it demands of itself as well as of its faculty and students. Marquette University is accredited by the Higher Learning Commission, a commission of the North Central Association of Colleges and Schools. Marquette University has set consistently high standards for itself that have resulted in accreditation and/or certification of its academic programs from these additional organizations and associations.

These accreditations assure a student that Marquette is recognized and approved by select national and regional educational associations, societies and councils. In addition, a student has the security of knowing that credits earned at Marquette have transfer value to comparable institutions of learning, just as an incoming transfer student learns by checking this list that Marquette can be expected to honor most credits earned at a similarly accredited college or university.

Accrediting Agencies

<table>
<thead>
<tr>
<th>College/School</th>
<th>Name of Agency</th>
<th>Academic Programs</th>
<th>Website</th>
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<tbody>
<tr>
<td>Klingler College of Arts and Sciences</td>
<td>American Psychological Association</td>
<td>Graduate Psychology – PhD in Clinical Psychology</td>
<td><a href="http://www.apa.org/">http://www.apa.org/</a></td>
</tr>
<tr>
<td>Klingler College of Arts and Sciences</td>
<td>Computing Accreditation Commission of ABET</td>
<td>BS in Computer Science</td>
<td><a href="http://www.abet.org">www.abet.org</a> (<a href="http://www.abet.org">http://www.abet.org</a>)</td>
</tr>
</tbody>
</table>
-BS/J.D.  
-M.B.A.  
-Executive M.B.A.  
-M.B.A./J.D.  
-M.B.A./M.A. Political Science  
-M.S. Accounting  
-M.S. Accounting Analytics  
-M.S. Applied Economics  
-M.S. Healthcare Technology Management  
-MS Supply Chain Management       | http://www.aacsb.edu/ |
| Diederich College of Communication      | National Association of Schools of Theatre          | BA degree with major in Theatre Arts                                              | http://nast.arts-accredit.org/ |
| School of Dentistry                     | Commission on Dental Accreditation (CODA) of the American Dental Association | D.D.S., certificate and master’s in advanced specialty education programs in endodontics, orthodontics and dentofacial orthopedics, and prosthodontics, certificate in advanced education in general dentistry. | http://www.ada.org/117.aspx |
| College of Education                    | American Psychological Association                  | Graduate Education – Ph.D. in Counseling Psychology                              | http://www.apa.org/          |
| College of Education                    | Council for Accreditation of Counseling and Related Educational Programs (CACREP) | M.S.-Clinical Mental Health Counseling  
M.A.-School Counseling                  | http://www.cacrep.org/ |
| College of Engineering                  |                                                      | The Biomedical Engineering, BSBE program is accredited by the Engineering Accreditation Commission of ABET | http://www.abet.org/          |
| College of Engineering                  |                                                      | The Civil Engineering, BSCE program is accredited by the Engineering Accreditation Commission of ABET | http://www.abet.org/          |
### College of Engineering

- **The Computer Engineering, BSCO program** is accredited by the Engineering Accreditation Commission of ABET
  - [http://www.abet.org/](http://www.abet.org/)

- **The Construction Engineering and Management, BS CNEN program** is accredited by the Engineering Accreditation Commission of ABET
  - [http://www.abet.org/](http://www.abet.org/)

- **The Electrical Engineering, BSEE program** is accredited by the Engineering Accreditation Commission of ABET
  - [http://www.abet.org/](http://www.abet.org/)

- **The Mechanical Engineering, BSME program** is accredited by the Engineering Accreditation Commission of ABET
  - [http://www.abet.org/](http://www.abet.org/)

### College of Health Sciences

- **Accreditation Review Commission on Education for the Physician Assistant, Inc. (ARC-PA)**
  - Master of Physician Assistant Studies
  - [http://www.arc-pa.org/](http://www.arc-pa.org/)

- **American Society of Exercise Physiologists**
  - BS degree with major in Exercise Physiology
  - [http://www.asep.org](http://www.asep.org)

- **Commission on Accreditation in Physical Therapy Education (CAPTE)**
  - Doctor of Physical Therapy
  - [http://www.capteonline.org/home.aspx](http://www.capteonline.org/home.aspx)

- **Commission on Accreditation of Athletic Training Education (CAATE)**
  - Masters in Athletic Training
  - [http://www.caate.net/imis15/caate](http://www.caate.net/imis15/caate)

- **Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA) of the American Speech-Language-Hearing Association**
  - M.S. in Speech-Language Pathology
  - [https://caa.asha.org](https://caa.asha.org)

- **National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)**
  - BS degree with major in Clinical Laboratory Sciences
  - [http://www.naacls.org](http://www.naacls.org)

- **Section of Legal Education and Admissions to the Bar of the American Bar Association**
  - J.D.
  - [http://www.americanbar.org/groups/legal_education.html](http://www.americanbar.org/groups/legal_education.html)

### Nursing

- **Commission on Collegiate Nursing Education (CCNE)**
  - Bachelor of Science in Nursing
  - Master of Science in Nursing
  - Doctor in Nursing Practice
  - Post-graduate APRN certificate
  - [http://www.aacn.nche.edu/ccne-accreditation](http://www.aacn.nche.edu/ccne-accreditation)

- **Accreditation Commission for Midwifery Education (ACME)**
  - Certificate in Nurse Midwifery
  - MS in Nursing with a specialization in Nurse Midwifery
  - [http://www.midwife.org/](http://www.midwife.org/)

### Nursing Council on Accreditation of Nurse Anesthesia Educational Programs (COA)

- DNP specialization-Nurse anesthesia
  - [http://home.coa.us.com/Pages/default.aspx](http://home.coa.us.com/Pages/default.aspx)

### Certification, Licensure, Credentialing and Other Recognitions

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<th>College/School</th>
<th>Name of Agency</th>
<th>Academic Programs</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klingler College of Arts and Sciences</td>
<td>American Chemical Society</td>
<td>BS in Chemistry</td>
<td><a href="https://www.acs.org/content/acs/en/about/governance/committees/training/acapprovals.html">https://www.acs.org/content/acs/en/about/governance/committees/training/acapprovals.html</a></td>
</tr>
<tr>
<td>College of Business Administration</td>
<td>Chartered Financial Analyst (CFA) Institute</td>
<td>BS in Finance, Applied Investment Management (AIM). The AIM program is a CFA Program Partner. The partnership designation means that Marquette University offers a degree program that covers at least 70 percent of the CFA Institute’s Program Candidate Body of Knowledge, the CFA Institute Ethical and Professional Standards, and other requirements.</td>
<td><a href="http://www.cfainstitute.org/partners/university/Pages/cfa_program_partners_overview.aspx">http://www.cfainstitute.org/partners/university/Pages/cfa_program_partners_overview.aspx</a></td>
</tr>
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</table>
College of Education
Wisconsin Department of Public Instruction

Graduate School
Commission on Accreditation of Allied Health Education Programs (CAAHEP)

College of Health Sciences
American Board of Physical Therapy Residency and Fellowship Education (ABPTRFE)

College of Health Sciences
National Strength and Conditioning Association

Law School
Association of American Law Schools

College of Nursing
Wisconsin Board of Nursing

College of Nursing
Illinois Board of Nursing

Legal Disclosures
Non-Discrimination Statement

Marquette University, in accordance with its Jesuit tradition and Guiding Values, is committed to fostering a diverse community of outstanding faculty, staff, and students, as well as ensuring equal educational opportunity, employment, and access to services, programs, and activities, without regard to an individual’s race, color, national origin, religion, age, disability, sex, gender identity/expression, sexual orientation, marital status, pregnancy, predisposing genetic characteristic, or military status. Employees, students, applicants or other members of the University community (including but not
limited to vendors, visitors, and guests) may not be subjected to harassment that is prohibited by law, or treated adversely or retaliated against based upon a protected characteristic.

The University's policy as well as federal and state laws and regulations prohibit unlawful discrimination and harassment. These laws include the Americans with Disabilities Act (ADA), Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, Title VII of the Civil Rights Act of 1964 as Amended by the Equal Employment Opportunity Act of 1972. These laws prohibit discrimination and harassment, including sexual harassment and sexual violence.

Employee inquiries concerning the application of Section 503 of the Rehabilitation Act of 1973, Section 402 of the Vietnam Era Veteran's Readjustment Assistance Act of 1974 and Title I of the Americans with Disabilities Act of 1990 may be referred to the Office of Human Resources; Straz Tower; P.O. Box 1881; Milwaukee, WI 53201-1881; (414) 288-7305.

Student inquiries concerning Section 504 of the Rehabilitation Act of 1973 and Title III of the Americans with Disabilities Act of 1990 may be referred to the Office of Human Resources; Straz Tower; P.O. Box 1881; Milwaukee, WI 53201-1881; (414) 288-1645.

Student and employee inquiries concerning the application of Titles VI, VII the Age Discrimination in Employment Act of 1967, as amended and Executive Order 11246, as amended, may be referred to Lynn Mellantine, Affirmative Action Officer: Straz Tower, P.O. Box 1881, Milwaukee, WI 53201-1881; (414) 288-3430.

If you feel that you have been subjected to sexual harassment, discrimination or sexual misconduct, please contact Christine Harris Taylor, Title IX Coordinator: Alumni Memorial Union, Room 437, P.O. Box 1881, Milwaukee, WI 53201-1881, (414) 288-3151, christine.taylor@marquette.edu, or Office for Civil Rights: 500 W. Madison, Street, Suite 1475, Chicago, IL 60661-4544, (312) 730-1560.

The Marquette University Board of Trustees approved the Affirmative action Program, formalizing the University's position toward human rights. This program reaffirms and specifies action programs to continue the pledge of promotion and equal opportunity for all qualified persons.

State Authorization
Marquette University is registered as a Private Institution with the Minnesota Office of Higher Education pursuant to sections 136A.61 to 137A.71. Registration is not an endorsement of the institution. Credits earned at the institution may not transfer to all other institutions.

Written Agreements
As per Federal Financial Aid regulations, the following is a list of the entities with which Marquette University has a written agreement that enables Marquette students to broaden their educational experience.

## Domestic Programs

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Sponsoring Academic Unit</th>
<th>Portion of the Program that is delivered by the Entity/Institution</th>
<th>Method of Delivery</th>
<th>Costs Students May Be Expected to Incur</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milwaukee Institute of Art and Design (MIAD)</td>
<td>Milwaukee, WI</td>
<td>College of Communication</td>
<td>Various; Fine Arts- Graphic Design minor Fine Arts-Studio Art minor</td>
<td>In person</td>
<td>Students pay Marquette tuition for the MIAD courses; No additional tuition is charged; however, MIAD courses may have course-specific fees for supplies.</td>
</tr>
<tr>
<td>Medical College of Wisconsin (MCW)</td>
<td>Wauwatosa, WI</td>
<td>Graduate School</td>
<td>-Master's in Bioinformatics-less than 50% -Master's in Healthcare Technologies Management-up to 33% -Ph.D. in Biomedical Engineering-up to 40% -all other non-Biomedical Engineering full-time Ph.D. students- up to 6 credits.</td>
<td>In person</td>
<td>Students pay Marquette tuition; there are no additional costs to the students.</td>
</tr>
<tr>
<td>University of Wisconsin - Milwaukee</td>
<td>Milwaukee, WI</td>
<td>Graduate School</td>
<td>Up to 6 credits.</td>
<td>In person or on-line classes depending on method of delivery that UWM uses.</td>
<td>Students pay Marquette tuition; there are no additional costs to the students.</td>
</tr>
<tr>
<td>The Blood Center of Wisconsin</td>
<td>Milwaukee, WI</td>
<td>Graduate School</td>
<td>MS in Transfusion Medicine 18 out of 38-40 credits are awarded</td>
<td>In person</td>
<td>$4,915.00 total for the entire 18 credits</td>
</tr>
<tr>
<td>General Electric (GE) Edison Systems Engineering Program</td>
<td>Waukesha, WI</td>
<td>Graduate School</td>
<td>Master's in Electrical and Computer Engineering-30% Master's in Biomedical Engineering-18-20% Master's in Mechanical Engineering-18-20%</td>
<td>In person</td>
<td>None; this training is required as part of the students' employment at GE.</td>
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<td>Program</td>
<td>Location</td>
<td>Degree Program</td>
<td>Delivery</td>
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<tr>
<td>General Electric (GE) Edison Healthcare Software Program</td>
<td>Waukesha, WI</td>
<td>Graduate School Master’s in Computing-33-40%</td>
<td>In person/</td>
<td>None; this training is required as part of the students’ employment at GE.</td>
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<tr>
<td>General Electric (GE) Edison Aviation Engineering Program</td>
<td>Grand Rapids, MI</td>
<td>Graduate School Master’s in Computing-33-40%</td>
<td>In person/</td>
<td>None; this training is required as part of the students’ employment at GE.</td>
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<tr>
<td>Midwest Catholic Consortium, which includes</td>
<td>Various locations</td>
<td>Graduate School No more than 6 credits.</td>
<td>In person or</td>
<td>Tuition is paid at the home institution; there are no additional costs to the students.</td>
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<tr>
<td>Graduate Schools</td>
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<td>online,</td>
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<td>Jesuit Multilateral Agreement - Jesuit MBA</td>
<td>Participants are located throughout the United States **</td>
<td>Graduate School M.B.A.-Depends on the timing of when a student transfers to the new institution; however, it will be less than 50%.</td>
<td>It varies by school; most programs are in person</td>
<td>Students pay the tuition at the school into which they transferred; there are no additional costs to the students.</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** For information regarding our study abroad program agreements please see our Office of International Education Study Abroad information (https://studyabroad.marquette.edu/).
Graduate School Bulletin

From the Dean of the Graduate School

Welcome!

Marquette University offers a broad array of outstanding graduate educational opportunities, including doctoral degrees, master’s degrees and certificate programs. Graduate-level programs contribute to the vibrant intellectual community found at Marquette. Each of the programs described in this section of the bulletin has been designed to provide you with the educational experience in classroom, laboratory and clinical settings that will help you meet your professional and personal goals.

Marquette’s graduate programs provide you with the opportunity to study with superb faculty who are strongly committed to their roles as teachers and as scholars. A spirit of exploration, discovery and innovation unites the work of our faculty and graduate students, whether they are probing the fundamental questions in their specific disciplines or applying new knowledge, often through novel interdisciplinary approaches, to solve some of the most challenging problems of our time. This vibrant community of scholars is informed by the mission of Marquette University. Graduate programs, while unique in emphasis and based on discipline-specific information and methods, are conducted in such a manner that students understand and appreciate the Jesuit/Catholic linking of faith, justice and search for truth. Further, Marquette’s graduate programs emphasize a worldview informed by multicultural and global perspectives. Finally, students are encouraged to engage in service to their communities and to commit to the ethical practice of their profession.

In addition to the individual graduate programs, the Graduate School offers a wide range of academic support and professional development services. Among these are the Graduate Student Organization and the Preparing Future Faculty and Professionals program. These organizations provide graduate students with the opportunity to interact with colleagues from across campus and offer extracurricular social and professional development opportunities. More information about Graduate School programs and services is available on the Graduate School website (http://www.marquette.edu/grad/).

I invite you to explore the details of our graduate programs through the links found here. The staff of the Graduate School and the faculty in the individual programs welcome your interest in Marquette University!

Douglas W. Woods, Ph.D.
Vice Provost for Graduate and Professional Studies
Dean of the Graduate School

Mission Statement

Informed by our Jesuit, Catholic heritage, the mission of the Marquette University Graduate School is to recruit, support, and educate students to be highly innovative, competent, and ethical researchers, scholars and professionals who are committed to the service of others.

How to Use

The Graduate Bulletin contains information regarding the academic calendar, admissions, degree requirements, fees, regulations and course offerings. Prospective and current graduate students are responsible for all information contained in this bulletin that is pertinent to graduate study and their specific field. Academic policy and course changes apply to all students as of the date they become effective, regardless of whether they were in effect at the time the student initially enrolled at Marquette. A graduate student may follow the program requirements of the bulletin that are in effect at the time he/she submits an application, or any other bulletin used during their enrollment as long as the student's program has not been discontinued in the bulletin year the student decides to follow. That is, students may not continue in programs that have been discontinued, unless they maintain continuous enrollment from the time of admission and follow the degree requirements in effect during one of the bulletin years in which the program was active. Students must abide by only one bulletin's degree requirements. If any exceptions to this policy are required due to length of time between submitting an application and beginning the program, the student is notified in writing of the applicable bulletin to follow. In order to properly audit a student's academic record for graduation, the student must notify the Graduate School in writing if any bulletin other than the one in effect at the time of application is to be used.

Graduate School students must assume full responsibility for knowledge of the rules and regulations of the Graduate School and the special requirements of their individual degree programs. It is the responsibility of each graduate student to verify and meet the deadlines listed in the Academic Calendar (p. 21) (e.g., for submitting forms, submitting theses or dissertations).

Changes to the Graduate Bulletin

Marquette University reserves the right to make changes of any nature in its programs, calendar, or academic schedule whenever in its sole judgement it is deemed necessary or desirable. The decision of Marquette University as to the interpretation and method of implementation of its rules, regulations, program requirements, schedules and calendars shall be conclusive and final.
### Location

The Graduate School office is located in Holthusen Hall, 305, 1324 W. Wisconsin Avenue, Milwaukee, WI 53233. Office hours are 8 a.m. to 4:30 p.m. with the exception of national or university holidays when the office is closed. Mail should be sent to Marquette University Graduate School, P.O. Box 1881, Milwaukee, WI 53201-1881. The Graduate School's telephone number is (414) 288-7137, the fax number is (414) 288-1902, the email address is mugs@marquette.edu, and the website is http://www.marquette.edu/grad/.

### Degrees Offered

* No formal specialization offered.

<table>
<thead>
<tr>
<th>Program</th>
<th>Degree</th>
<th>Specializations</th>
<th>Program Administered By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Statistics (APST)</td>
<td>M.S.</td>
<td>*</td>
<td>Mathematical and Statistical Sciences</td>
</tr>
<tr>
<td>Bioinformatics (BIIN)</td>
<td>M.S.</td>
<td>*</td>
<td>Computer Science / Mathematical and Statistical Sciences / Medical College of Wisconsin</td>
</tr>
<tr>
<td>Biological Sciences (BSCI)</td>
<td>M.S., Ph.D.</td>
<td>Biochemistry (BCHM), Cell Biology (CEBI), Developmental Biology (DEBI), Ecology (ECOL), Genetics (GENE), Microbiology (MICR), Molecular Biology (MOBI), Neurophysiology (NPHY), Physiology (PHYS)</td>
<td>Biological Sciences</td>
</tr>
<tr>
<td>Biomedical Engineering (BIEN)</td>
<td>M.S.</td>
<td>Bioinstrumentation/Computers (BICO), Biomechanics/ Biomaterials (BIOM), Rehabilitation Bioengineering (REBI), Systems Physiology (SYPH)</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>Biomedical Engineering (BIEN)</td>
<td>M.E.</td>
<td>Biocomputing (BIOC), Bioimaging (BIIM), Bioinstrumentation (BIOI), Biomechanics (BIOM), Biorehabilitation (BIRE)</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>Biomedical Engineering (BIEN)</td>
<td>Ph.D.</td>
<td>Bioinstrumentation (BIOI), Biomechanics (BMCH), Biomedical Imaging (BMIM), Cellular and Molecular Engineering (CLME), Computational Biology and Bioinformatics (CBBI), Rehabilitation Bioengineering (RBEN)</td>
<td>Biomedical Engineering / Medical College of Wisconsin (M.D./Ph.D.)</td>
</tr>
<tr>
<td>Chemistry (CHEM)</td>
<td>M.S., Ph.D.</td>
<td>Analytical Chemistry (ANCH), Bioanalytical Chemistry (BIAN), Biophysical Chemistry (BIPH), Chemical Physics (CHPH), Inorganic Chemistry (INCH), Organic Chemistry (ORCH), Physical Chemistry (PHCH)</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Christian Doctrine (THEO)</td>
<td>M.A.C.D.</td>
<td>*</td>
<td>Theology</td>
</tr>
<tr>
<td>Civil Engineering (CIEN)</td>
<td>M.S., Ph.D.</td>
<td>Construction Engineering (CNEN), Environmental and Water Resources Engineering (ENWR), Structural Engineering and Structural Mechanics (SESM), Transportation Engineering and Materials (TEMA)</td>
<td>Civil, Construction and Environmental Engineering</td>
</tr>
<tr>
<td>Clinical Case Management/Care Coordination (CCMC) - Moratorium on Admissions</td>
<td>Post-baccalaureate Certificate</td>
<td>*</td>
<td>Nursing</td>
</tr>
<tr>
<td>Clinical Mental Health Counseling (CMHC)</td>
<td>M.S.</td>
<td>Addiction Counseling (ADCO), Child and Adolescent Counseling (CACO), Clinical Rehabilitation Counseling (CRCO)</td>
<td>Counselor Education and Counseling Psychology</td>
</tr>
<tr>
<td>Communication (COMM)</td>
<td>M.A.</td>
<td>Communication and Media Studies (COMS), Digital Communication Strategies (DGCS)</td>
<td>Communication</td>
</tr>
<tr>
<td>Computational Mathematical and Statistical Sciences (CMPS)</td>
<td>M.S., Ph.D.</td>
<td>*</td>
<td>Mathematical and Statistical Sciences</td>
</tr>
<tr>
<td>Computer Science (COSC)</td>
<td>Ph.D.</td>
<td>*</td>
<td>Computer Science</td>
</tr>
<tr>
<td>Computing (COMP)</td>
<td>M.S.</td>
<td>Big Data and Data Analytics (BDDAO), Computing Career Change Opportunity (CCCOO), Information Assurance and Cyber Defense (IACDO)</td>
<td>Computer Science</td>
</tr>
<tr>
<td>Counseling Psychology (COPS)</td>
<td>Ph.D.</td>
<td>*</td>
<td>Counselor Education and Counseling Psychology</td>
</tr>
<tr>
<td>Program</td>
<td>Degree</td>
<td>Notes</td>
<td>College</td>
</tr>
<tr>
<td>----------------------------------------------</td>
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</tr>
<tr>
<td>Criminal Justice Data Analytics (CJDA)</td>
<td>M.S.</td>
<td>*</td>
<td>Social and Cultural Sciences</td>
</tr>
<tr>
<td>Data Science (DTSC)</td>
<td>Certificate</td>
<td>*</td>
<td>Computer Science</td>
</tr>
<tr>
<td>Dentistry-Dental Biomaterials (DBIMA)</td>
<td>M.S.</td>
<td>*</td>
<td>Dentistry</td>
</tr>
<tr>
<td>Dentistry-Endodontics (DENDO)</td>
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<td>*</td>
<td>Dentistry</td>
</tr>
<tr>
<td>Dentistry-Orthodontics (DORTH)</td>
<td>M.S.</td>
<td>*</td>
<td>Dentistry</td>
</tr>
<tr>
<td>Dentistry-Periodontics (DPERI)</td>
<td>M.S.</td>
<td>*</td>
<td>Dentistry</td>
</tr>
<tr>
<td>Dentistry-Prosthodontics (DPROS)</td>
<td>M.S.</td>
<td>*</td>
<td>Dentistry</td>
</tr>
<tr>
<td>Educational Policy and Leadership (EDPL)</td>
<td>M.A.</td>
<td>Educational Policy and Foundations (EDPF)</td>
<td>Educational Policy and Leadership</td>
</tr>
<tr>
<td>Educational Policy and Leadership (EDPL)</td>
<td>M.Ed.</td>
<td>Educational Administration (EDAD); Secondary Education - Science, Technology, Engineering and Mathematics (STEM); Student Affairs in Higher Education (SAHE); Elementary Education (ELED) - Moratorium on Admissions for ELED; Secondary Education (SEED) - Moratorium on Admissions for SEED</td>
<td>Educational Policy and Leadership</td>
</tr>
<tr>
<td>Educational Policy and Leadership (EDPL)</td>
<td>Ph.D.</td>
<td>*</td>
<td>Educational Policy and Leadership</td>
</tr>
<tr>
<td>Director of Instruction (DIIN)</td>
<td>Certificate</td>
<td>*</td>
<td>Educational Policy and Leadership</td>
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<tr>
<td>Electrical and Computer Engineering (EECE)</td>
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<td>*</td>
<td>Electrical and Computer Engineering</td>
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<td>Elementary Education (ELED) - Moratorium on Admissions</td>
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<td>*</td>
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<td>M.A.</td>
<td>British, American and other Anglophone Literatures (BRAM)</td>
<td>English</td>
</tr>
<tr>
<td>English (ENGL)</td>
<td>Ph.D.</td>
<td>American Literature (AMLI), British Literature (BRLI)</td>
<td>English</td>
</tr>
<tr>
<td>Environmental Engineering (ENEN)</td>
<td>Certificate</td>
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<td>Civil, Construction and Environmental Engineering</td>
</tr>
<tr>
<td>Essential Skills for Practicing Engineers (ESPE)</td>
<td>Certificate</td>
<td>*</td>
<td>Engineering</td>
</tr>
<tr>
<td>Exercise and Rehabilitation Science (EXRS)</td>
<td>M.S., Ph.D.</td>
<td>*</td>
<td>Health Sciences</td>
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<tr>
<td>Healthcare Technologies Management (HCTM)</td>
<td>M.S.</td>
<td>*</td>
<td>Engineering / Medical College of Wisconsin</td>
</tr>
<tr>
<td>Health Care Data Analytics (HCDA)</td>
<td>M.S.</td>
<td>*</td>
<td>Nursing</td>
</tr>
<tr>
<td>History (HIST)</td>
<td>M.A.</td>
<td>European History (EURO), United States History (USHI), Global Studies (GLST)</td>
<td>History</td>
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<tr>
<td>History (HIST)</td>
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<td>European History (EURO), United States History (USHI)</td>
<td>History</td>
</tr>
<tr>
<td>Interdisciplinary Ph.D. (INPR)</td>
<td>Ph.D.</td>
<td>*</td>
<td>Graduate School</td>
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<tr>
<td>International Affairs (INAF)</td>
<td>M.A.</td>
<td>*</td>
<td>Political Science</td>
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<tr>
<td>Languages, Literatures and Cultures (LLAC) - Moratorium on Admissions</td>
<td>M.A.</td>
<td>Spanish (SPAN)</td>
<td>Languages, Literatures and Cultures</td>
</tr>
<tr>
<td>Machine Learning for Engineering Applications (MLRN)</td>
<td>Certificate</td>
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<td>Electrical and Computer Engineering</td>
</tr>
<tr>
<td>Mathematics for Secondary School Teachers (MSST)</td>
<td>M.S.</td>
<td>*</td>
<td>Mathematical and Statistical Sciences</td>
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<tr>
<td>Neuroscience (NRSC)</td>
<td>Ph.D.</td>
<td>Behavioral and Cognitive Neuroscience (BHCN), Cellular and Molecular Neuroscience (CLML), Computational, Neurorehabilitation and Neuroimaging Neuroscience (CNNR)</td>
<td>Graduate School</td>
</tr>
</tbody>
</table>

* indicates the program may be accessible in the future
<table>
<thead>
<tr>
<th>Degree Code</th>
<th>Degree Type</th>
<th>Degree Title</th>
<th>Concentrations</th>
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<tbody>
<tr>
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<td>M.S.N.</td>
<td>Nursing</td>
<td>Adult-Gerontology Primary Care Nurse Practitioner (AGPC), Adult-Gerontology Acute Care Nurse Practitioner (AGAC), Adult-Gerontology Clinical Nurse Specialist (AGCS), Health Systems Leadership (HSLD), Nurse Midwifery (NUMI), Dual Primary Care and Acute Care Pediatric Nurse Practitioner (PEDD), Pediatric Primary Care Nurse Practitioner (PEDI), Pediatric Acute Care Nurse Practitioner (PEDA)</td>
</tr>
<tr>
<td>NURS</td>
<td>Post-master's Certificate</td>
<td>Nursing</td>
<td>Adult-Gerontology Primary Care Nurse Practitioner (AGPC), Adult-Gerontology Acute Care Nurse Practitioner (AGAC), Adult-Gerontology Clinical Nurse Specialist (AGCS), Health Systems Leadership (HSLD), Nurse Midwifery (NUMI), Dual Primary Care and Acute Care Pediatric Nurse Practitioner (PEDD), Pediatric Primary Care Nurse Practitioner (PEDI), Pediatric Acute Care Nurse Practitioner (PEDA)</td>
</tr>
<tr>
<td>NURS</td>
<td>D.N.P.</td>
<td>Nursing</td>
<td>Adult-Gerontology Primary Care Nurse Practitioner (AGPC), Adult-Gerontology Acute Care Nurse Practitioner (AGAC), Health Systems Leadership (HSLD), Dual Primary Care and Acute Care Pediatric Nurse Practitioner (PEDD), Pediatric Primary Care Nurse Practitioner (PEDI), Pediatric Acute Care Nurse Practitioner (PEDA), Nurse Anesthesia (NRAN), Nurse Midwifery (MIDW) - MIDW is Post-master's D.N.P. only</td>
</tr>
<tr>
<td>NURS</td>
<td>Ph.D.</td>
<td>Nursing</td>
<td>*</td>
</tr>
<tr>
<td>PHIL</td>
<td>M.A.</td>
<td>Philosophy</td>
<td>History of Philosophy (HIPH), Social and Applied Philosophy Philosophy (SOAP)</td>
</tr>
<tr>
<td>PHIL</td>
<td>Ph.D.</td>
<td>Philosophy</td>
<td>*</td>
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<td>POSC</td>
<td>M.A.</td>
<td>Political Science</td>
<td>*</td>
</tr>
<tr>
<td>PRIN</td>
<td>Certificate</td>
<td>Educational Policy and Leadership</td>
<td>Behavior Analysis (BHAN), Clinical Psychology (CLPS) - CLPS is earned only en route to Ph.D.</td>
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<tr>
<td>PSYC</td>
<td>M.S.</td>
<td>Psychology</td>
<td>Bilingual English-Spanish (BIES)</td>
</tr>
<tr>
<td>PSYC</td>
<td>Ph.D.</td>
<td>Psychology</td>
<td>Behavior Analysis (BHAN), Clinical Psychology (CLPS)</td>
</tr>
<tr>
<td>PUBS</td>
<td>M.A.P.</td>
<td>Center for Urban Research, Teaching and Outreach</td>
<td>Nonprofit Sector (NPSE)</td>
</tr>
<tr>
<td>REST</td>
<td>Ph.D.</td>
<td>Theology</td>
<td>Judaism and Christianity in Antiquity (JUCA), Historical Theology (HITH), Systematic Theology (SYTH), Theological Ethics (THET), Theology and Society (THSO)</td>
</tr>
<tr>
<td>RETI</td>
<td>Certificate</td>
<td>Electrical and Computer Engineering</td>
<td>*</td>
</tr>
<tr>
<td>SCCN</td>
<td>M.A.</td>
<td>Counselor Education and Counseling Psychology</td>
<td>*</td>
</tr>
<tr>
<td>SEED</td>
<td>Certificate</td>
<td>Educational Policy and Leadership</td>
<td>*</td>
</tr>
<tr>
<td>SPLA</td>
<td>M.S.</td>
<td>Speech Pathology and Audiology</td>
<td>Bilingual English-Spanish (BIES)</td>
</tr>
<tr>
<td>SPRT</td>
<td>M.S.</td>
<td>Health Sciences</td>
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</tr>
<tr>
<td>SUPR</td>
<td>Certificate</td>
<td>Educational Policy and Leadership</td>
<td>*</td>
</tr>
<tr>
<td>SYEN</td>
<td>Certificate</td>
<td>Engineering</td>
<td>*</td>
</tr>
<tr>
<td>THEO</td>
<td>M.A.</td>
<td>Theology</td>
<td>General Studies (GNRL), Historical Theology (HITH), Judaism and Christianity in Antiquity (JUCA), Systematic Theology/Theological Ethics (SYTH), Theology and Society (THSO)</td>
</tr>
<tr>
<td>TRME</td>
<td>M.S.T.M.</td>
<td>Graduate School / Versiti Blood Center of Wisconsin</td>
<td>Business Administration (BUAD), Education (EDUC), Science (SCIE)</td>
</tr>
</tbody>
</table>
Legend of Abbreviations for Graduate Degree Programs:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Degree Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.A.</td>
<td>Master of Arts</td>
</tr>
<tr>
<td>M.S.</td>
<td>Master of Science</td>
</tr>
<tr>
<td>M.A.C.D.</td>
<td>Master of Arts in Christian Doctrine</td>
</tr>
<tr>
<td>M.S.N.</td>
<td>Master of Science in Nursing</td>
</tr>
<tr>
<td>M.A.P.</td>
<td>Master of Arts in Public Service</td>
</tr>
<tr>
<td>M.S.T.M.</td>
<td>Master of Science in Transfusion Medicine</td>
</tr>
<tr>
<td>M.Ed.</td>
<td>Master of Education</td>
</tr>
<tr>
<td>D.N.P.</td>
<td>Doctor of Nursing Practice</td>
</tr>
<tr>
<td>M.E.</td>
<td>Master of Engineering</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>Doctor of Philosophy</td>
</tr>
</tbody>
</table>

Definitions

Degree Program - An academic program of study leading to a master's, Ph.D. or professional degree. All degree programs require that a minimum number of semester credit hours be earned, as referenced in the official bulletins of the University that are produced each academic year.

Certificate - A post-baccalaureate or post-master program of study offered at the graduate level, in which a specific skill set is demonstrated at the end of the program, usually culminating in a capstone course. The courses in a certificate program may be applied toward a graduate degree program. A minimum of 12 semester credit hours must be earned in a certificate program.

Specialization - An integrated, coherent set of courses that define a limited topic or field of study at the graduate level that is taken within the degree program. A minimum of 12 semester credit hours must be earned in the specialization.

Accelerated Degree Program - Designed to provide a more efficient means to obtain a graduate degree or certificate, if an ADP is offered for that particular program. Allows students to begin accumulating credits toward completion of graduate degrees with approved ADPs while still enrolled as an undergraduate.

Dual Degree - A formal agreement where two degrees are conferred from two institutions (or colleges/schools within a university). Some courses/credits taken at both institutions/colleges/schools apply to both degrees and two diplomas are produced, one for each degree.

Joint Degree - A formal agreement where one degree is conferred from two institutions (or colleges/schools within a university). Some courses/credits taken at both institutions/colleges/schools apply to the degree and both institutions/colleges/schools are listed on a single diploma.

Accelerated Degree Programs Offered

<table>
<thead>
<tr>
<th>Program</th>
<th>Degrees</th>
<th>Program Administered By:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Statistics (APST)</td>
<td>B.S. and M.S.</td>
<td>Mathematical and Statistical Sciences</td>
</tr>
<tr>
<td>Biomedical Engineering (BIEN)</td>
<td>B.S.B.E. and M.S.</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>Chemistry (CHEM)</td>
<td>B.S. and M.S.</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Civil Engineering (CIEN)</td>
<td>B.S.C.E. (B.S. in Civil Engineering) and M.S.</td>
<td>Civil, Construction and Environmental Engineering</td>
</tr>
<tr>
<td>Civil Engineering (CIEN)</td>
<td>B.S.C.E. (B.S. in Construction Engineering) and M.S.</td>
<td>Civil, Construction and Environmental Engineering</td>
</tr>
<tr>
<td>Communication (COMM)</td>
<td>B.A. and M.A.</td>
<td>Communication</td>
</tr>
<tr>
<td>Computing (COMP)</td>
<td>B.S. and M.S.</td>
<td>Computer Science</td>
</tr>
<tr>
<td>Criminal Justice Data Analytics (CJDA)</td>
<td>B.A. and M.S.</td>
<td>Social and Cultural Sciences</td>
</tr>
<tr>
<td>Electrical and Computer Engineering (EECE)</td>
<td>B.S.E.E. and M.S.</td>
<td>Electrical and Computer Engineering</td>
</tr>
<tr>
<td>English (ENGL)</td>
<td>B.A. and M.A.</td>
<td>English</td>
</tr>
<tr>
<td>Exercise and Rehabilitation Science (EXRS)</td>
<td>B.S. and M.S.</td>
<td>Health Sciences</td>
</tr>
<tr>
<td>Health Care Data Analytics (HCDA)</td>
<td>Bachelor's and M.S.</td>
<td>Nursing</td>
</tr>
<tr>
<td>History (HIST)</td>
<td>B.A. and M.A.</td>
<td>History</td>
</tr>
<tr>
<td>International Affairs (INAF)</td>
<td>B.A. and M.A.</td>
<td>Political Science</td>
</tr>
<tr>
<td>Languages, Literatures and Cultures-Spanish (LLAC) - Moratorium on Admissions</td>
<td>B.A. (Spanish) and M.A.</td>
<td>Languages, Literatures and Cultures</td>
</tr>
<tr>
<td>Mechanical Engineering (MEEN)</td>
<td>B.S.M.E. and M.S.</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>Neuroscience (NRSC)</td>
<td>B.S. in Biomedical Sciences majors and Ph.D.</td>
<td>Graduate School</td>
</tr>
<tr>
<td>Philosophy (PHIL)</td>
<td>B.A. and M.A.</td>
<td>Philosophy</td>
</tr>
<tr>
<td>Political Science (POSC)</td>
<td>B.A. and M.A.</td>
<td>Political Science</td>
</tr>
<tr>
<td>School Counseling (SCCN)</td>
<td>B.S. in Educational Studies and M.A.</td>
<td>Counselor Education and Counseling Psychology</td>
</tr>
<tr>
<td>Speech-Language Pathology (SPLA)</td>
<td>B.S. and M.S.</td>
<td>Speech Pathology and Audiology</td>
</tr>
</tbody>
</table>
## Dual Degree Programs Offered

<table>
<thead>
<tr>
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## Joint Degree Programs Offered

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### LEGEND OF ABBREVIATIONS FOR Accelerated, DUAL AND Joint DEGREE PROGRAMS:

- **B.A.** Bachelor of Arts
- **B.S.** Bachelor of Science
- **B.S.B.E.** Bachelor of Science in Biomedical Engineering
- **B.S.C.E.** Bachelor of Science in Civil Engineering or Construction Engineering
- **B.S.E.E.** Bachelor of Science in Electrical Engineering
- **B.S.M.E.** Bachelor of Science in Mechanical Engineering
- **J.D.** Juris Doctor
- **M.A.** Master of Arts
- **M.B.A.** Master of Business Administration
- **M.S.** Master of Science
- **M.S.T.M.** Master of Science in Transfusion Medicine
- **Ph.D.** Doctor of Philosophy
Admission and Readmission to the Graduate School

Admission Status

Marquette University admits graduate students under five different categories: degree, non-degree, temporary, lifelong learner and visiting scholar status.

Degree Status

When applicants are admitted to a program leading to a certificate, master's or doctoral degree, they are said to be in “degree status.” This designation is made after the department and the Graduate School have accepted an application. Students are eligible for tuition scholarships, graduate assistantships and fellowships, as available.

In order to be considered for admission to degree status, all applicants are required to submit an application, the application fee, copies of all college-university transcripts except those from Marquette University and other materials as requested by the department. Upon admission, final official transcripts from all previously attended colleges/universities (except Marquette) must be submitted to the Graduate School within the first five weeks of the term of admission, or a hold preventing registration for future terms is placed on students' records.

Non-Degree Status

This status designates any student taking graduate-level classes who is not seeking a certificate, a master's degree or a doctoral degree. Non-degree students are not eligible to receive financial aid from the Graduate School except for Catholic Schools Personnel Scholarships and the Milwaukee Area Teachers Scholarships. Non-degree students are typically not eligible to receive federally subsidized loans and should contact the Office of Student Financial Aid for exceptions.

All non-degree applicants are required to submit an application, the application fee and copies of all college-university transcripts except those from Marquette University. Upon admission, final official transcripts from all previously attended colleges/universities (except Marquette) must be submitted to the Graduate School within the first five weeks of the term of admission, or a hold preventing registration for future terms is placed on students' records. Non-degree applicants seeking admission to degree status must meet the same admission standards as other applicants to a degree program.

Completion of any number of non-degree credits does not guarantee acceptance into a degree program and, if a non-degree student is subsequently admitted to a degree program, there is no guarantee that credits earned while in non-degree status count toward the degree. Most degree programs accept between 9 and 15 transfer credits, depending on the number of credits needed for the degree (see Transfer of Credit). Non-degree students are not permitted to take more than 9 credits until they certify in writing that they are aware of the policies and limits regarding the transfer of credits into the degree program.

Credits earned as a non-degree student may be considered as graduate credits and certified as such to school boards or other authorities. Non-degree students may register for any course (with the exception of courses in dentistry) if they have met the prerequisites and have department permission. Non-degree students interested in taking courses in dentistry must have special permission from the Graduate School and the School of Dentistry.

Temporary Admission Status

This status designates any applicant who: has applied to a degree or a non-degree program, meets the minimum admission requirements, but has not submitted all of the necessary documents.

All temporary applicants are required to submit an application, the application fee and copies of all college-university transcripts except those from Marquette University. Applicants seeking temporary admission status must meet the same admission standards as applicants to a degree program. Temporary students are not eligible to receive financial aid from the Graduate School and are typically not eligible to receive federally subsidized loans; students should contact the Office of Student Financial Aid for exceptions.

Admission with temporary status is valid for only one term. Students must apply for and be admitted as a degree or non-degree student before being allowed to register for additional terms.

Credits earned as a student with temporary status may be considered as graduate credits and certified as such to school boards or other authorities. Students with temporary status may register for any course (with the exception of courses in dentistry) if they have met the prerequisites and have department permission.

Lifelong Learner Status

Most students who begin in a non-degree status fully intend to ultimately pursue a degree and request admission to degree status at some point in the future. However, some students would like to take courses in a variety of subjects just for personal enrichment, without ever intending to pursue a graduate degree. The lifelong learner status is intended for these types of students.
Lifelong learner status is a specialization within the general Graduate School non-degree category. Admission decisions are made by the associate dean of the Graduate School. Students are not required to maintain continuous enrollment.

Lifelong learner status is not intended as a gateway to a certificate, master’s degree or doctoral degree program. Lifelong learners may not take courses for credit. Rather, they audit all courses that they take while they are lifelong learners. Tuition is charged the regular audit rate. Enrollment in all courses for students in the lifelong learner status requires the consent of the department offering the course.

If lifelong learners should decide they want to pursue a graduate degree, they must apply for admission in a degree status for the program that they would like to pursue. Once admitted to a regular program, students may begin to accumulate credits and earn grades just as other students.

**Visiting Scholar Status**

This status designates a student, seeking a degree at another institution, who takes one or more classes at Marquette University with the intention of transferring the earned credits. Evidence of the student’s status and academic performance at the other institution is required.

Visiting scholars may apply for federal financial aid through the student’s home school or through Marquette. Students applying for aid through Marquette must request a Consortium Agreement from the Office of Student Financial Aid. When the completed form is returned to Marquette, the student becomes eligible for federal financial aid and the Office of Student Financial Aid processes the student’s FAFSA. Students applying for federal aid through their home institutions should consult their home institutions for their application policies and procedures.

**General Admission Requirements**

Only applicants whose total record indicates that they can do independent, original and high quality academic work are admitted. Departments reserve the right to limit the number of students accepted within a given time period.

All applicants should have:

- A bachelor’s degree from a recognized college or university or the equivalent foreign degree.
- At least a B average (3.000 grade point average on a 4.000 scale).
- Course work suitable for the desired graduate program (applicants with a bachelor’s degree but not the necessary course work should consult the Office of Undergraduate Admissions, [414] 288-7302 or [800] 222-6544, or the Undergraduate Bulletin, for information about special student status).
- Some programs require professional experience in addition to a bachelor’s degree. See the Graduate School Programs section of this bulletin for more information.

In addition, no application for admission is considered for any applicant with an outstanding balance of $3,000 or more owed to the university.

**Submitting an Application**

All applications for admission must be submitted online. A link to our online application can be found at the Graduate School website (http://www.marquette.edu/grad/). Prospective speech-language pathology students must apply and submit all application requirements via CSDCAS (https://csdcas.liaisoncas.com/applicant-ux/#/login).

**Program Information**

An applicant’s program may have special requirements of background, tests, personal statements, other materials and application deadlines. Check the Graduate School Programs section of this bulletin for information and requirements specific to each program or see requirements on the Graduate School website (http://www.marquette.edu/grad/programs_index.shtml/). Applicants are responsible for meeting and submitting all of their program’s application requirements. Prospective speech-language pathology students must apply and submit all application requirements via CSDCAS (https://csdcas.liaisoncas.com/applicant-ux/#/login).

**Application and Financial Aid Deadlines**

Applicants are admitted to the Graduate School on the recommendation of the intended department and the approval of the dean of the Graduate School.

Applications for admission to programs that have no deadlines listed in the Graduate School Programs section of this bulletin must be received in the Graduate School by Aug. 1 for fall admission (June 1 for international applicants), by Dec. 15 for spring admission (Oct. 15 for international applicants) and by May 1 for summer admission. If the program has a listed application deadline, all application materials must arrive before that date. Admission to the program is valid only for the term specified on the application, unless a deferral is requested from the Graduate School before the start of that term. Deferral of admission may be requested by completing and submitting the Request for Deferral of Admission form available on the Graduate School website (http://www.marquette.edu/grad/forms_index.shtml/). Note that deferral is for admission only, and not for financial aid. Not all programs allow students to defer their admission, so applicants must check the Graduate School Programs section for more information.

Students applying to more than one program must submit a separate application and application fee for each program.

The deadline for applying for merit-based Graduate School financial aid (assistantships and scholarships) is Feb. 15 for the following fall term, Nov. 15 for the following spring term and April 15 for the summer sessions. Deadlines falling on weekends or holidays are extended to the close of the following
Admission and Readmission to the Graduate School

business day. Some programs may have deadlines for fall admission that are earlier than the financial aid application deadlines. New applicants for financial aid in those programs must adhere to the earlier department deadlines that are listed in the Graduate School Programs section of this bulletin.

Inactive Files
Incomplete and inactive admission files are discarded after one year.

International Student Requirements

Definition of an International Student
An international student is defined as an applicant who is not a U.S. citizen or permanent resident.

Application Instructions
As described in the Application Instructions section later in this bulletin, international applicants are required to submit an application form, a non-refundable application fee, copies of all college/university transcripts with English translations, three letters of recommendation, test data, evidence of English proficiency (such as TOEFL) and other materials as required by the program to which they are applying. Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms is placed on students' record.

Financial Verification and Visa Regulations
Upon acceptance to the Graduate School, F-1 students must adequately document their financial resources for the duration of the academic program before visa documents are issued. Financial verification, in the form of an appropriate sponsorship statement and an advance deposit (in U.S. currency), must be sent to Marquette before the certificate of eligibility for a visa is issued. The advance deposit is waived if students receive a scholarship or other academic award that covers the cost of the first term's tuition. If students choose not to attend Marquette University after the I-20 has been issued, all but $10 (U.S. currency) is refunded. A written request for a refund must be sent back to the Graduate School with the original I-20.

International students must abide by the regulations of their legal status in the United States regarding their defined educational objectives, academic load and employment. Most international applicants are eligible only for regular degree status. Those seeking admission for non-degree status must obtain a statement of their legal eligibility from Marquette's Office of International Education.

Application Procedures
The Graduate School requires all applicants to submit a complete application, a $50 application fee and unofficial transcripts from all post-secondary institutions attended. Upon admission, final official transcripts from all previously attended colleges/universities, except those from Marquette University, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms is placed on the student's record. Additional requirements are required for admission to most programs. Supplemental documents may be submitted to gradadmit@marquette.edu. Applications are not reviewed for admission until all materials, including those requested by the proposed graduate program, have been received.

It is the applicant's responsibility to obtain information about all admission prerequisites and application requirements from the Programs section of this bulletin, from the Graduate School or department websites, or from the director of graduate studies in the proposed program. It is to the applicant's advantage to make sure that the application package is complete well in advance of published deadlines.

Submit all application materials online\(^1\), or if needed by mail to: Marquette University Graduate School, P.O. Box 1881, Milwaukee, WI 53201-1881; or by courier to: Marquette University Graduate School, 1324 W. Wisconsin Ave., Room 305, Milwaukee, WI 53233. Although the department makes recommendations on admission, and may notify the application of the recommendation, official notification of the decision regarding admission and merit-based financial aid come only from the Graduate School.

Official transcripts must come directly from all universities or colleges attended, including junior/community colleges, or delivered electronically directly to the Graduate School from the university/college or via a secure, third-party method that has been verified by the sending institution. Official test scores must also come directly from the applicable testing service.

Prospective speech-language pathology students must apply and submit all application requirements via CSDCAS (https://csdcas.liaisoncas.com/applicant-ux/#/login).

Students are strongly advised to submit the application for admission before having other application materials sent. Receipt of the application in the Graduate School before other application materials ensures that all documents are matched to the application quickly and accurately. If supporting documents are submitted to the Graduate School before the application has been received, processing of the documents and review of the application file can be delayed. It is to the applicants' advantage to ensure that the application is submitted before any additional documents.

All applicants must submit the following:

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\(^{1}\) Prospective speech-language pathology students must apply and submit all application requirements via CSDCAS (https://csdcas.liaisoncas.com/applicant-ux/#/login).
• A completed online application form.

• A non-refundable application processing fee (U.S. currency only) of $50.00. **Note:** The application fee is waived for current Marquette University undergraduate students and alumni of Marquette University.

• Official Transcripts: Upon admission, final official transcripts from all previously attended colleges/universities, except those from Marquette University, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms is placed on the student’s record. Transcripts are not considered official unless they are sent directly to the Graduate School from the institution attended or delivered electronically directly to the Graduate School via a secure, third-party method that has been verified by the sending institution. Transcripts are considered unofficial if routed through the applicant. Applicants with course work in progress toward the fulfillment of a degree are required to submit an official final transcript verifying receipt of their degree after completing the course work. All applicants who have transcripts in a language other than English must provide official transcripts in addition to certified English translations. Applicants who previously attended Marquette University need not request Marquette transcripts but are required to furnish transcripts from other schools they attended.

Applicants must notify the Graduate School if the last (family) name is different from the name on the Graduate School application.

• Letters of Recommendation: Applicants should check the Programs section of this bulletin for information about the number of letters of recommendation needed, if any. Some programs may require an additional form for the recommendations which, if required, would be included in the Programs section. Letters of recommendation from former professors are preferred and should comment on the applicant’s past academic record and potential for future success. Letters of recommendation should normally be submitted online as part of the online application system. Letters of recommendation, if not submitted online, may be sent as an email attachment to gradadmit@marquette.edu.

Applicants applying for financial aid through the Graduate School must check the financial aid boxes on the application (see the Financial Aid section of this bulletin).

• Permission to discuss the applicant’s file with a third party (optional): Applicants who are unable to speak directly with an admissions counselor (due to distance, expense, etc.) may give the Graduate School permission to communicate with a third party. Marquette University requires that this request be made in writing, be signed by the applicant and specify the name(s) of the third party.

• Additional application materials as requested by the program: It is the applicant’s responsibility to obtain information about any additional requirements from the Programs section of this bulletin, from the Graduate School or department websites or from the director of graduate studies in the proposed program.

• Test Data: One or more tests may be required as part of the admission process. Consult the Programs section of this bulletin or the program requirements on the Graduate School website (http://www.marquette.edu/grad/programs_index.shtml) for information specific to the applicant’s proposed program. Regardless of the test, all scores are considered unofficial until the Graduate School receives the official scores from the testing agency. Copies of test scores issued to the applicant are considered unofficial.

The Graduate School urges applicants to take higher education assessment tests well in advance of the date the scores are needed. It usually takes at least six weeks for scores to reach the Graduate School office after the exam. Assessment test scores should be relatively recent; scores more than five years old (two years for English proficiency exams) may not be accepted.

**Graduate Record Examination (GRE)**

Most graduate programs request a GRE (General Test) score. Departments may require applicants to take a “Subject” (advanced) GRE Test. Consult the Programs section of this bulletin for specific information.

Test takers applying to the Graduate School must enter the code 1448 in the Score Report Recipient section of the GRE registration form. It is not sufficient to list Marquette as the institution. Failure to enter the correct code delays the admission decision.

**Proof of English Proficiency—International Students Only**

International students whose language of instruction for their bachelor’s degree education (or master’s, if applicable) was not English must provide proof of English proficiency, displaying an adequate command of both written and spoken English. Programs through TOEFL, WESLI, ELS and IELTS satisfy this requirement.

Minimum requirements:

• TOEFL: Score of at least 550 on the paper-based version. The Internet-based, or iBT, version of TOEFL tests students in four areas: reading, writing, speaking and listening. In general, a minimum score of 20 is required for each of the four sections, with an overall minimum score of 80.

• WESLI: Level 700 is required.

• ELS: Level 112 with a grade point average of 3.000 or higher is required.

• IELTS: Total overall score of 6.5 or higher is required, with no less than 6.5 in each of the four sections.

Applicants should consult the Graduate School Programs section of this bulletin for any specific information, as some graduate departments may require scores higher than these minimums. Test scores may not be more than two years old.

Students already holding a Marquette master’s degree may earn a second Marquette master’s degree in another discipline by applying for and receiving admission, and by completing all of the requirements necessary for the second master’s degree.
During the first term of study of the second master’s degree, students must complete a Master’s Program Plan Form, have it approved and submit it to the Graduate School. Additionally, if students intend to request and transfer credits from their first master’s degree, they must complete the Master’s Degree Transfer of Credit Request form, available online on the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/). Between 9 and 15 credits may be transferred from the first master’s degree, depending on the total number of credits required to complete the second master’s degree. Normal transfer credit policy applies. Credits to be transferred in must normally have been earned within six years prior to admission into the second master’s degree. For more information, see Transfer of Credit under Academic Regulations.

Readmission

Students who have been discontinued due to failure to enroll for one or more terms and who otherwise were performing in a satisfactory manner may apply for readmission by email to the department. The director of graduate studies or chair of the department endorse the request either positively or negatively and then forward the request to the Graduate School for processing. To be readmitted, students must receive a positive departmental endorsement.

Students who have withdrawn from the university, were dismissed from their program or who were suspended for any reason must be formally readmitted to the Graduate School before resuming their studies. To be readmitted, students must receive a positive departmental endorsement. Furthermore, no application for readmission is considered for any former Marquette student with an outstanding balance owed to the university. The dean of the Graduate School and the major department jointly decide if a student is readmitted.

In either case, no application for readmission is considered for any former Marquette student with an outstanding balance of $3,000 or more owed to the university. In addition, a student must pay a fee to the Graduate School for back-continuous enrollment for each unregistered fall and spring term since discontinuation. Once the back-continuous enrollment fee is paid, students are readmitted to the next available term, provided the time to complete the degree has not expired.

The request for readmission from students who have been Required to Withdraw for Academic Reasons (academically dismissed) must include the Appeal Academic Dismissal/Satisfactory Academic Progress form located on the Marquette Central academic forms website (http://www.marquette.edu/mucentral/registrar/policy_forms.shtml/).

Students who are dismissed for failure to register must request readmission in writing to the Graduate School via their home departments. The request must include an explanation as to why they failed to register.

The request for readmission from students who have been dismissed or suspended for reasons other than academic dismissal must include a statement by the students addressing previous weaknesses, steps taken to correct the weaknesses and an explanation of why the students feel they have the ability to succeed in graduate studies. Students may not be readmitted to a program that is no longer active at the time of requested readmission.

In being readmitted, students face the possibility that previously completed work might not be accepted with the readmission decision, even if taken within the same program. The major department and dean of the Graduate School may also set readmission conditions on students’ resumption of work toward a degree, such as registering for additional course work, retaking examinations, completing the degree within a specified time period or other appropriate terms.
Academic Calendar

Academic Calendar/Exam Schedules (https://www.marquette.edu/central/registrar/calendars-exams-schedules.php)
Academic Programs Overview

Master’s Degree Overview

The master’s degree is awarded in recognition of academic accomplishment as demonstrated by a program of course work, passing of the required examinations, or the preparation of a thesis, project or essay.

Master’s Program Planning Form

Master’s degree students must complete the Master’s Program Planning Form with their adviser, have it approved by their adviser and the director of graduate studies or chair, and submit it to the Graduate School before the end of their first term of study. The form is available online at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/). This form constitutes a formal agreement between students and the university, and outlines what must be done to complete the master’s degree. It may be changed by submitting a revised and approved Master’s Program Planning Form.

Second Language Requirements

Some programs require reading comprehension in one or more additional languages. This requirement is used as an important tool to advance the scholarly and research efforts of students. To determine language requirements for a specific program, consult the Programs section of this bulletin.

There are a number of ways by which students can complete the language requirement(s), including: taking a second language proficiency examination administered by the Department of Languages, Literatures and Cultures; taking a three-credit, semester-long second language reading knowledge course (course number xxxx 6204) offered by the Department of Languages, Literatures and Cultures; proving to the students’ departmental faculty that they have the necessary second language proficiency as evidenced by prior language study; or by taking an exam prepared and graded by the students’ academic departments. The 6204 reading knowledge courses may only be taken for credit and may not be audited.

If students choose to take a second language reading knowledge course, the tuition for the course is charged at the normal Graduate School tuition rate in effect at the time the course is being taken, and the language credits are in addition to regular course credits required for that academic program and degree. The grades earned in the second language reading knowledge course is included in the students’ term and cumulative credits and grade point average.

Students also have the option of taking a two-hour exam to fulfill a graduate degree program’s language requirement. The exam, graded SNC/UNC, assesses students’ reading proficiency in a particular language through translation and comprehension questions about a second language passage. Students must register for the exam just like a regular course, and a $100 fee is assessed. If students receive an unsatisfactory grade assessment, it is recommended that they complete the corresponding 6204 reading knowledge course. If students decide to retake the exam outside of the course, they have to reregister for the exam and pay the $100 exam fee.

Whatever method is chosen, it is the responsibility of the students’ home departments to determine what level of language proficiency is sufficient. It is also the departments’ responsibility to notify the Graduate School of each student’s completion of second language requirements.

Specializations

A specialization (or sub-plan), consisting of a minimum of twelve credits of course work in a specific field, may be required for some master’s programs. When a specialization is required, it must be selected from those currently active within approved Marquette University programs. The specialization must be outlined on the Master’s Program Planning Form, found at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/). For additional information, consult the Programs section of this bulletin.

Comprehensive Examinations

Candidates for a master’s degree in many departments must successfully pass a comprehensive examination on their total graduate program of studies. If students fail, a second and final examination may be given at the discretion of the department, as each department administers its own comprehensive exams.

Students are encouraged to contact their program for specific information including deadlines and procedures. A department may require students to complete a specific course instead of passing a comprehensive exam. Generally speaking, this course may be taken only after students have completed all of the other core course requirements.

Plan A and Plan B

The Graduate School offers the master’s degree under two plans: Plan A, which requires that students write a thesis, and Plan B, which substitutes additional course work, a professional project, essay and/or a comprehensive examination instead of the thesis. Some master’s programs allow students to choose either Plan A or Plan B. For plans offered in each program, consult the Programs section of this bulletin.
Students may submit a petition to the Graduate School requesting a change from Plan A to Plan B (or vice versa) providing they have permission from their program. A new Master’s Program Planning Form, available at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/), must be completed and submitted to the Graduate School.

If students change plans after completing some or all of the required thesis or project courses, these credits do not automatically apply toward the revised degree requirements.

**Plan A — Master’s Degree with Thesis**

**Minimum Credit Requirements**

A minimum of 30 credit hours is required and a minimum of 18 credit hours of the course work must be taken in the major field. Some departments require more credit hours; students should consult the Programs section of this bulletin. Courses in the program must be taken at the graduate level (5000-level or above). Consult individual program listings and department advisers to determine the specific requirements for Plan A programs.

**Thesis Credits**

Students must take six hours of thesis credit. Students who enroll in and pay for thesis credits are not entitled to a refund of tuition for these credits if they should subsequently drop out, withdraw from their program or transfer to a Plan B option.

**Thesis Outline Form**

Students must submit an outline for the proposed thesis or professional project. (No outline is required by the Graduate School for writing a master’s essay, although some departments may choose to require the form.) The outline lists the committee members which, for a master’s thesis, must contain a minimum of three voting members. Master’s thesis outline forms are available online at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/).

**Master’s Thesis**

Although there is no Graduate School requirement that students hold a formal, public defense, it is expected that some type of defense of the thesis be held. The format of this defense is determined by the department. Whatever format is used, the results of the defense must be reported on the Master’s Thesis/Essay/Professional Project/Publication Approval Form, available at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/). The defense is considered successful, and students passed, if a majority of the voting members of the thesis committee vote to approve the defense and the department chair signs to accept any non-unanimous vote.

In a master’s thesis, students demonstrate familiarity with the tools of research and scholarship in their major field, show thorough knowledge of the subject covered and reflect independence of thought, critical insight and originality. The thesis must also be acceptable in style and composition. Students are required to follow the instructions on the Thesis Directives and thesis submission checklist, available online at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/). A thesis that does not conform to the directives, including format specifications, is not accepted by the Graduate School.

An electronic copy of the completed master’s thesis must be submitted online through ProQuest, on or before the deadline listed in Marquette’s Academic Calendar. Although students retain ownership and copyright privileges, a copy of the approved thesis is considered a public document by Marquette University. The thesis may be placed in the Marquette University library, used by students and faculty, or otherwise released to the public unless restricted by the author. See the electronic theses and dissertations website (http://www.marquette.edu/grad/etd.shtml/) for details.

**Recording Thesis Defenses**

In order to facilitate an open and honest dialogue, thesis defenses are not normally recorded. However, it is the policy of the Marquette University Graduate School to allow, with prior permission, the audio and/or video recording of students’ thesis defense.

Common courtesy requires that the thesis committee chair and all committee members must be made aware, in advance of the defense, of students’ desire to record the proceedings. Additionally, the chair and all committee members must assent to such a recording. Such written approval must include the signatures of the chair and all committee members, and the signed approval must be submitted to the assistant director for student records in the Graduate School prior to the recording being made.

If a thesis defense is recorded, all questions, statements or other comments, whether verbal or written, remain the property of the person who spoke or wrote them, and any future use of the recording is subject to applicable copyright laws.

**Plan B — Master’s Degree Without Thesis**

**Minimum Credit Requirements**

A minimum of 30 credit hours is required and a minimum of 18 credit hours of the course work must be taken in the major field. Some departments require more credit hours; students should consult the Programs section of this bulletin. Courses in the program must be taken at the graduate level (5000-level or above). Consult individual program listings and department advisers to determine the specific requirements for Plan B programs.
Professional Project Credits
Academic units may require students to register for project credits or similar course work. Students who enroll in and pay for project credits are not entitled to a refund of tuition of these credits if they should subsequently drop out of or be withdrawn from their programs.

Professional Project
In a project, students demonstrate familiarity with the tools of research and scholarship in the major field, show thorough knowledge of the subject covered and reflect independence of thought, critical insight and originality. The project must be acceptable to the department in style and composition. Formatting of professional projects is at the discretion of the department. Thesis Directives, found at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/), may be used as a guide.

An electronic copy of the professional project and the original Master’s Thesis/Essay/Professional Project/Publication Approval Form with appropriate signatures must be submitted to the Graduate School office on or before the deadline listed in the Academic Calendar.

Essay
In many graduate programs, a master’s essay may be required even though no formal credit is given for it and no outline is required by the Graduate School. Students should confer with their advisers about topics and guidelines for producing an acceptable paper, including requirements for length and references. Essays must be acceptable to the department in style and composition. Formatting of essays is at the discretion of the department. Thesis Directives, found at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/), may be used as a guide.

An electronic copy of the essay and the original Master’s Thesis/Essay/Professional Project/Publication Approval Form with appropriate signatures must be submitted to the Graduate School office on or before the deadline listed in the Academic Calendar.

Doctoral Degree Overview
The doctor of philosophy (Ph.D.) degree is awarded in recognition of high attainment and ability in a special subject field. Candidates are required to pass examinations that cover general and specific knowledge in their area of expertise and prepare and successfully defend a dissertation based on independent, original and high-quality research that makes a significant contribution of knowledge to the field.

Interdisciplinary Ph.D. Program
Faculty from both doctoral and non-doctoral departments may propose interdisciplinary Ph.D. programs for individual students to the University Board of Graduate Studies. This provides students and faculty with opportunities for creative academic programming and research opportunities that cross traditional disciplinary boundaries. Since there is no departmental structure to support these programs, certain understandings, commitments, and restrictions, beyond those required in regular doctoral programs, are necessary. Additional information appears in the Programs section of this bulletin. Direct specific questions to the Graduate School.

Application Procedures
Applicants must follow the instructions in the Admission and Readmission section of this bulletin. It is the responsibility of applicants to obtain information about any additional requirements from the Programs section of this bulletin, from the Graduate School or department websites, or from the director of graduate studies in the proposed program. Students with master’s degrees from Marquette are required to submit a new application to the Graduate School if they wish to be considered for doctoral admission.

Doctoral Program Planning Form
Students must prepare a program of study with their advisers that lists the steps and classes needed to complete their doctoral degree. The Doctoral Program Planning Form, available online at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/), is used for this purpose. The approved Doctoral Program Planning Form constitutes a formal agreement between students, their academic departments, and Marquette University and, once established, may be changed only by formal amendment using the Doctoral Program Planning Form Amendment, available online at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/). The Doctoral Program Planning Form should be submitted to the Graduate School prior to the end of the students’ first year of doctoral study. Course work, second language and residency requirements are accepted as part of students’ doctoral program only after approval of the Doctoral Program Planning Form. If credits for a master’s degree from another institution are to be transferred, students must be sure that a final, official transcript is on file at the Graduate School.

Credit Requirements
Depending on previous preparation and the nature of the research undertaken, the number of credits required for individual students, even within the same program, may vary considerably. Minimum credit requirements have, however, been established by the university and the Graduate School.

The doctoral degree is the highest degree conferred by Marquette University. There are significant differences in degree requirements between the physical/natural sciences and other fields, and these are addressed below. However, in all cases, students must complete 12 dissertation credits and must satisfy the university’s residency requirements. The credit requirements listed below are the minimum established by the Graduate School. Individual departments may set their own requirements that meet or exceed these minimums.
Biological Sciences and Chemistry
A minimum of 24 credits of course work beyond the bachelor’s degree is required, plus 12 dissertation credits. In cases in which students enter the program with a master’s degree in the same or closely related field, students may request the department and the Graduate School to allow the master’s degree to satisfy up to 25% of the 24 required credits. In all cases, a minimum of 18 credits of course work exclusive of the dissertation must be taken at Marquette while in the doctoral program.

Any exceptions to the total credits and minimum grade point average requirements for any degree and/or certificate must be approved by the provost.

All Other Programs
A minimum of 45 credits of course work beyond the bachelor’s degree is required, plus 12 dissertation credits. In cases in which students enter the program with a master’s degree from another institution in the same or closely-related field, students may request the department and the Graduate School to allow the master’s degree course work to satisfy up to 50% of the required credits. For such cases, a minimum of 21 credit hours of course work exclusive of the dissertation must be taken at Marquette while in a Ph.D. or D.N.P. program. For cases in which students enter the program with a master’s degree from Marquette University in the same or closely-related field, students may request the department and the Graduate School to allow up to 30 credits of course work from the Marquette master’s degree to satisfy the Ph.D. course credit requirement. Thus, in this latter case, a minimum of 15 credit hours of course work exclusive of the dissertation must be taken at Marquette while in a Ph.D. or D.N.P. program.

Any exceptions to the total credits and minimum grade point average requirements for any degree and/or certificate must be approved by the provost.

Second Language Requirements
Some programs require reading comprehension in one or more additional languages. This requirement is used as an important tool to advance the scholarly and research efforts of students. To determine language requirements for a specific doctoral program, consult the Programs section of this bulletin. If required, students must select one (or more) language(s) in which there is significant scholarly literature in their program field.

There are a number of ways by which students can complete the language requirement(s), including: taking a second language proficiency examination administered by the Department of Languages, Literatures and Cultures; taking a three-credit, semester-long second language reading knowledge course (course number xxxx 6204) offered by the Department of Languages, Literatures and Cultures; proving to students’ departmental faculty that they have the necessary second language proficiency as evidenced by prior language study; or by taking an exam prepared and graded by students’ academic departments. The 6204 reading knowledge courses may only be taken for credit and may not be audited.

If students choose to take a second language reading knowledge course, the tuition for the course is charged at the normal Graduate School tuition rate in effect at the time the course is being taken, and the language credits are in addition to regular course credits required for that academic program and degree. The grades earned in the second language reading knowledge course are included in the students’ term and cumulative credits and grade point average.

Students also have the option of taking a two-hour exam to fulfill a graduate degree program’s language requirement. The exam, graded SNC/UNC, assesses students’ reading proficiency in a particular language through translation and comprehension questions about a second language passage. Students must register for the exam just like a regular course, and a $100 fee is assessed. If students receive an unsatisfactory grade assessment, it is recommended that they complete the corresponding 6204 reading knowledge course. If students decide to retake the exam outside of the course, they have to re-register for the exam and pay the $100 exam fee.

Whatever method is chosen, it is the responsibility of the students’ home departments to determine what level of language proficiency is sufficient. It is also the departments’ responsibility to notify the Graduate School of each student’s completion of second language requirements.

Specializations
A specialization (or sub-plan), consisting of a minimum of twelve credits of course work in a specific field, may be required for some doctoral programs. When a specialization is required, it must be selected from those currently active within approved Marquette University programs. The specialization must be outlined on the Doctoral Program Planning Form. For additional information, consult the Programs section of this bulletin.

Residency Requirement
The residency requirement is designed to immerse doctoral students in the campus community of scholars. It must be satisfied in the department in which students are seeking a doctoral degree. Plans for the residency must be included on the Doctoral Program Planning Form. The residency requirement is met when students complete one of the three options below:

1. Nine credits of course work, dissertation credits, or its equivalent per term, for two terms within an 18-month period, or alternatively, completes at least 6 credits of course work, or its equivalent per term, for three terms within an 18-month period. The credit load necessary to meet the nine- or six-credit requirement may be met by course work alone or course work in conjunction with dissertation credits.
2. Alternative requirements as defined by the department in which students are seeking a doctoral degree. Alternative requirements by the department must be filed with and approved by the dean of the Graduate School.
3. In exceptional situations, waivers may be granted on a case-by-case basis with the recommendation from the department in which students are seeking a doctoral degree and with the approval from the dean of the Graduate School. In such cases, the department must make a credible
case that students have obtained the intended impact of the residency requirement (i.e., creating an immersion in the campus community of scholars) and stated the experiences through which that impact was achieved.

**Doctoral Qualifying Examination**

The DQE is an exploration of the students’ understanding in the program field and may be written, oral or both. It may also include an explanation of the proposed dissertation. Some departments require students to pass cumulative examinations. Required elements for the DQE are defined by the students’ program department. The DQE is typically scheduled after all course work, language and residency requirements have been completed. Taking the DQE before all requirements have been satisfied requires written permission from the students’ department.

The exam is conducted by a committee made up of at least three faculty members from the students’ program. If the committee includes a non-Marquette member, the department must note this exception in writing and submit a request and a curriculum vitae for that person to the Graduate School.

Students who fail the examination may, with the consent of the academic department, be eligible to take a second examination after fulfilling all conditions stipulated by the doctoral examining committee. If the second examination is unsatisfactory, no further examination is permitted.

**Official Doctoral Candidacy**

Students advance to doctoral candidacy upon recommendation of their department, having completed all course work, language, and residency requirements, and passing the DQE. The departments shall notify the Graduate School in writing, using the Advancement to Doctoral Candidacy form found online at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/), for all students recommended for candidacy.

**Dissertation Process**

**Assembling a Dissertation Committee**

Candidates select their dissertation committee with the assistance of their adviser. The committee must be comprised of a minimum of three voting members. The names of the members, including the chairperson, must be on the Outline for Dissertation, Thesis, Professional Project or Essay form, available online at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/). Emeriti faculty may be considered as Marquette or department committee members as specified by department guidelines. Emeriti faculty may be considered to serve in the role of co-chair or committee members as specified by department guidelines. At least one of the co-chairs must be a regular tenured or tenure track faculty member. If the committee includes a non-Marquette member, the department must submit a recent curriculum vitae for that member to the Graduate School with their Outline for Dissertation, Thesis, Professional Project or Essay form. The dean of the Graduate School appoints the dissertation committee by approving the outline form.

**Doctoral Dissertation Outline Form**

Students must submit an outline for the proposed dissertation on the Outline for Dissertation, Thesis, Professional Project or Essay form, typically within the first term that dissertation credits are taken, but no later than the deadline listed in this bulletin. The form is available online at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/). Outlines must be approved by the students’ adviser, the department chairperson, and the Graduate School. If the proposed research involves a real or apparent conflict of interest on the part of students, the dissertation director, or the committee members, it must be declared at the time the outline is submitted.

**Dissertation Credits**

Students must register for 12 hours of dissertation credits and may enroll for these while working on their doctoral dissertation outline or dissertation. Each department determines the number of credit hours that a candidate may take during any one term. Students who enroll in, and pay for, dissertation credits are not entitled to a refund of tuition of these credits even if they should subsequently drop out of or are withdrawn from their program.

**Dissertation Directives**

Directions for writing the dissertation and the dissertation submission checklist are available online at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/). Students are strongly encouraged to consult both and to check with their departments for additional guidelines. The Graduate School updates the directives periodically and students are responsible for using the most recent version. Dissertations that do not conform exactly to the most recent directives will not be accepted by the Graduate School.

**Writing the Dissertation**

A dissertation demonstrates a students’ familiarity with the tools of research and scholarship in the field, shows thorough knowledge of the subject covered and reflects independence of thought, critical insight and originality. The dissertation must exhibit the students’ mastery of the literature of the subject and familiarity with the sources and be presented with a satisfactory degree of literary skill. Students are required to follow the instructions in the Dissertation Directives. Dissertations not conforming to the directives, including format specifications, are not accepted by the Graduate School.

An electronic copy of the completed dissertation must be submitted online through ProQuest, and the original, completed Dissertation Approval Form must be turned into the Graduate School office by the date listed in the online Academic Calendar. Students must consult the dissertation submission checklist prior to submitting the dissertation and must consult the Dissertation Directives for a complete list of forms and other requirements that must
be turned in to the Graduate School at the time of submission of the dissertation. Although the student retains ownership and copyright privileges, a copy of the approved dissertation is considered the property of Marquette University. Bound or electronic copies may be made available to the public at the Marquette University library unless restricted by the author. See the electronic theses and dissertations website (http://www.marquette.edu/grad/etd.shtml/) for details.

Public Defense of the Dissertation

A public defense of the dissertation is conducted after candidates have completed all other formal requirements for the doctoral degree. The examination is primarily a defense of the dissertation. It also includes material relevant to the general field in which the dissertation is written, with particular attention to the more recent and significant developments.

The candidate and adviser select a date, during weekday working hours and avoiding public or religious holidays, for the public defense of the dissertation. If students want to graduate the same term the defense is made, the defense must be held before the deadline listed in the Academic Calendar. At least two weeks prior to the scheduled date for the dissertation defense, students must submit a signed Announcement for Public Defense of the Dissertation form, available online at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/). All committee members must sign this form indicating their agreement to the date of the public defense. The form must be accompanied by an electronic version of the abstract in MS Word, emailed to grad.records@marquette.edu.

The defense is considered successful, and candidates passed, if a majority of the voting members of the dissertation committee vote to approve the defense and if the department chair signs to accept any non-unanimous vote. In the case of an unsuccessful defense, disposition is decided upon after consultation between the academic department or college and the Graduate School.

Recording Dissertation Defenses

In order to facilitate an open and honest dialogue, dissertation defenses are not normally recorded. However, it is the policy of the Marquette University Graduate School to allow, with prior permission, the audio and/or video recording of a students' dissertation defense.

Common courtesy requires that the dissertation committee chair and all committee members must be made aware, in advance of the defense, of the students' desire to record the proceedings. Additionally, the chair and all committee members must assent to such a recording. Such written approval must include the signatures of the chair and all committee members, and the signed approval must be submitted to the assistant director for student records in the Graduate School prior to the recording being made.

If a dissertation defense is recorded, all questions, statements or other comments, whether verbal or written, remain the property of the person who spoke or wrote them, and any future use of the recording is subject to applicable copyright laws.
Academic Regulations

Academic Integrity

Academic integrity is the foundation of learning, research, and scholarship. To that end, it is imperative that all members of the university community adhere to a shared understanding of the standards outlined in this policy. All faculty, staff, and students are required to recognize, respect and uphold:

- The Statement on Academic Integrity
- The Honor Pledge
- The Honor Code
- Best Practices
- Academic Misconduct Policy

Statement on Academic Integrity

We, the scholars of Marquette University, recognize the importance of personal integrity in all aspects of life and work. We commit ourselves to truthfulness, honor, and responsibility by which we earn the respect of others. We support the development of good character in our academic community, and commit to uphold the highest standards of academic integrity as an important aspect of personal integrity. Our commitment obliges us as students, faculty, and staff to conduct ourselves according to the Marquette University Honor Code set forth below. We do this in pursuit of Marquette University's mission, which is the search for truth, the discovery and sharing of knowledge, the fostering of personal and professional excellence, the promotion of a life of faith, and the development of leadership expressed in service to others.

Students are asked to commit to academic integrity through the following honor pledge. Faculty may require students to sign the pledge in their courses or for any individual assignment.

Honor Pledge

I recognize the importance of personal integrity in all aspects of life and work. I commit myself to truthfulness, honor, and responsibility, by which I earn the respect of others. I support the development of good character, and commit myself to uphold the highest standards of academic integrity as an important aspect of personal integrity. My commitment obliges me to conduct myself according to the Marquette University Honor Code.

Honor Code

The honor code obliges students:

1. To fully observe the rules governing exams and assignments regarding resource material, electronic aids, copying, collaborating with others, or engaging in any other behavior that subverts the purpose of the exam or assignment and the directions of the instructor.
2. To turn in work done specifically for the paper or assignment, and not to borrow work either from other students, or from assignments for other courses, unless approved by the faculty member.
3. To give full and proper credit to sources and references, and to acknowledge the contributions and ideas of others relevant to academic work.
4. To report circumstances that may compromise academic honesty, such as inattentive proctoring or premature posting of answers.
5. To complete individual assignments individually, and neither to accept nor give unauthorized help.
6. To accurately represent their academic achievements, which may include their grade point average, degree, honors, etc., in transcripts, in interviews, in professional organizations, on resumes and in the workplace.
7. To report any observed breaches of this honor code and academic honesty.

Academic integrity is a matter of great importance to the entire Marquette community and as such the honor code obliges others on campus as well.

The honor code obliges instructors:

1. To monitor and design exams and assignments so that honest students are not disadvantaged by other students who might choose to cheat if given the opportunity.
2. To report circumstances that may compromise academic honesty, such as inattentive proctoring or premature posting of answers.
3. To follow all published procedures regarding cases of academic misconduct.
4. To report any observed breaches of this honor code and academic honesty.

The honor code obliges researchers:

1. To give full and proper credit to sources and references, and to acknowledge the contributions and ideas of others relevant to research.
2. To conduct research experiments according to professional standards of objectivity, conscientiousness, reliability and transparency.
3. To conduct all experiments according to professional ethical standards, and, when applicable, to submit all proposed investigations to the relevant oversight bodies.
4. To provide sufficient documentation of research methodology so that other researchers in the field may replicate work.
5. To observe all duties required by copyright, trademark, patent and/or other applicable laws or regulations.
6. To follow all published procedures regarding cases of personal and academic misconduct.
7. To report any observed breaches of this honor code and academic honesty.

The honor code obliges staff:

1. To interpret procedures and regulations in the spirit of furthering the highest standards of personal and academic integrity.
2. To report circumstances that may compromise academic honesty, such as inattentive proctoring or premature posting of answers.
3. To follow through on reporting, punishment, and record-keeping on all incidents of personal and academic misconduct.
4. To follow all published procedures regarding case of personal and academic misconduct.
5. To report any observed breaches of this honor code and academic honesty.

Academic Integrity Best Practices
In addition to the honor code, members of the Marquette University community commit to the following set of best practices.

As students we strive to come to class on time and to be prepared for the material at hand. This includes all readings and assignments. We strive to devote our full attention to the class proceedings and to be fully engaged in class discussions and activities. We recognize the importance of asking questions about material we don’t understand, as it helps other students who may not have thought of the question but need to hear the answer, and it gives the instructor valuable feedback. We respect the views of classmates and instructors, and we avoid distracting the class and instructor with irrelevant conversations or behavior. We strive to prepare for exams in a timely manner, and to seek help from the instructor when necessary during the preparation. We start preparing papers, projects, and homework assignments early enough to have sufficient time to do the best we can.

As instructors we strive to be prepared and current with respect to the content and conduct of our courses, and to plan the course and class sessions to achieve the course objectives effectively. We strive to answer questions honestly and completely, and to acknowledge when we do not have an answer. We strive to give all students equal opportunity to participate in class discussions and activities. We respect students’ views on issues of judgment, and we clearly distinguish between our personal opinions and our professional expertise. We are available during office hours or at arranged times to work with students individually to help them to master course material. We strive to develop and update exams and assignments so that they are meaningful tests of understanding and progress toward achieving course objectives. Finally, we give due and careful consideration to students’ answers and submissions when evaluating them and assigning grades.

As researchers we strive to be honest, accurate, efficient, ethical, objective, and accountable in conducting and reporting our research efforts. Where applicable, we aim to publish in outlets accessible to other professionals in the field for the greatest possible dissemination of creative scholarly research.

As staff we strive to serve all faculty and students within the confines of Marquette University’s policy and procedure. We recognize the importance of serving all faculty and students fairly and on a timely basis, while maintaining confidentiality. We respect teaching and learning, and support faculty and students in this endeavor every day.

Academic Integrity Tutorial
All undergraduate, graduate and health science professional students must successfully complete an Academic Integrity tutorial during their first term of enrollment, or be subject to a registration hold for the following term.

Academic Misconduct Policy
Definitions of Academic Misconduct
Academic misconduct includes, but is not limited to, individual violations, helping another student with any form of academic misconduct, failing to report any form of academic misconduct, or intentionally interfering with the educational process in any manner. Faculty, staff or students who are aware of academic misconduct and fail to report it are considered complicit in these actions. The following sections provide representative examples of academic misconduct. If students are in doubt as to whether an action or behavior is subject to the academic misconduct policy, they should consult an appropriate member of the Academic Integrity Council, faculty or staff.

Cheating

1. Copying from others for an assignment and/or during an examination, test or quiz.
2. Obtaining, or attempting to obtain, an assignment, examination, test, quiz or answer key without authorization.
3. Using unauthorized electronic devices or materials for an assignment, during an examination, test or quiz.
4. Communicating answers or providing unauthorized assistance for an assignment, examination, test or quiz.
5. Using unauthorized answers or assistance for an assignment, examination, test or quiz.
6. Offering one’s own work to another person, or presenting another person’s work as one’s own.
7. Completing an assignment and/or taking an examination, test or quiz for another student, or having someone complete an assignment, take an examination, test or quiz for oneself.
8. Tampering with an assignment, examination, test or quiz after it has been graded, and then returning it for additional credit.
9. Outsourcing assignments, papers, examinations, tests, quizzes to fellow students or third parties.

**Plagiarism**
Plagiarism is intellectual theft by the unethical use of sources. It means use of another’s creations or ideas without proper attribution. Credit must be given for every direct quotation, for paraphrasing or summarizing any part of a work and for any information that is not common knowledge. Plagiarism is further addressed in the Academic Integrity Tutorial.

**Academic Fraud**
1. Altering or forging documents including forms, letters, grade reports, medical reports, transcripts, and verifications.
2. Submitting substantial portions of the same work for credit in more than one course, or from previous institutions, without receiving permission from all instructors involved.
3. Using purchased answers, or selling answers to assignments, examinations, quizzes or papers.
4. Attending class for another, or having others attend class for oneself.
5. Falsifying the records of clients or patients.
6. Falsifying one’s own clinical, co-op, field placement or internship records.
7. Misrepresenting oneself, degree(s), areas of study, course work and/or grade point average.

**Research Misconduct**
The University Research Misconduct Policy (http://www.marquette.edu/orsp/documents/ResearchMisconductPolicy1_09.pdf) applies to faculty, staff, students, and others who are employed by or affiliated with Marquette University. Research misconduct is defined as fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results.

**Procedures for Incidents of Academic Misconduct**
When faculty members or other members of the Marquette community have reason to suspect or receive notification of alleged student academic misconduct, the Academic Misconduct Report form must be completed and submitted to the Academic Integrity Council director within five business days of obtaining information about an alleged violation. Reporters of misconduct must include a summary and attach evidence, if any, of the alleged misconduct.

The Academic Integrity Council director notifies students and selects an Investigating Officer to review the materials and interview the students and the reporter of the alleged misconduct. Within six business days of receiving the Academic Misconduct Report form, the Investigating Officer determines if the case warrants further action or is to be dismissed and inform the Academic Integrity Council director of same. Once the Investigating Officer informs the Academic Integrity Council director of the decision, the Academic Integrity Council director or designee reviews the Investigating Officer’s summary and notifies students within two business days of the disposition. For cases moving forward, the Academic Integrity Council director determines whether the case is eligible for expedited review or must be referred for a full hearing.

Students who withdraw from a class or the university and are later found to have violated the Academic Integrity Policy may have their withdrawal grade(s) changed to an administrative or failing grade.

**Expedited Procedure**
For cases in which students have no record of academic misconduct at Marquette University and the alleged misconduct is relatively minor and does not involve graduate students, or Health Science Professional courses, the Academic Integrity Council director may offer students an expedited review specifying the maximum penalty that could be assigned. Students have two business days to respond to the Academic Integrity Council director. If students accept responsibility and the penalty, the Academic Integrity Council director sends a final letter to the student summarizing the finding and the penalty. At the same time, the Academic Integrity Council director sends a letter specifying the penalty to the students’ college/school office, and the faculty member in whose class the misconduct occurred.

If students do not accept the expedited review option, the case moves to a full hearing.

In all cases, a copy of the file relating to the alleged misconduct including all correspondence is forwarded to the Office of the Registrar to be held in the students’ permanent confidential file.

**Full Hearing**
A Hearing Board is convened by the Academic Integrity Council director for cases that are ineligible for expedited review, all cases in which students request a hearing or cases the Academic Integrity Council director deems appropriate. The Board generally consists of two faculty, two students and the Dean’s Office designee from the student’s college/school. A faculty member is normally assigned the role of Board facilitator.
• On being formed, the Hearing Board reviews all documents and material related to the alleged misconduct
• A hearing normally occurs within ten business days of the Board’s formation. The hearing may be delayed by up to 30 business days if the Board cannot be convened.
• The Board determines whether there are witnesses it wishes to call in addition to any student under investigation. Students under investigation may also request additional evidentiary witnesses and provide additional information for consideration to the Board facilitator at least two business days prior to the hearing.
• Students may bring an individual for support. This person is not allowed to contribute to the proceedings. If the support person is an attorney, a representative from the Office of the General Counsel at Marquette must also be present. In these cases, the hearing may need to be rescheduled to allow a member of the Office of the General Counsel to attend.
• Prior to deliberation, the Board excuses all non-Board members from the meeting.
• Within three business days of the hearing, the Academic Integrity Council director sends a letter to the Office of the Dean in the students’ home college/school. The dean’s office has three business days to review the finding and inform the Academic Integrity Council director of any changes to the recommended penalty.
• At the same time, a copy of the file relating to the alleged misconduct including all correspondence is forwarded to the Office of the Registrar to be held in the students’ permanent confidential file, and if applicable, the maximum grade penalty allowed is forwarded to the faculty member in whose class the misconduct occurred.
• Within six business days of the hearing, the Academic Integrity Council director informs students summarizing the finding and the outcome (i.e., any penalty).

Student Appeals
Students have the right to appeal the Hearing Board’s determination if they believe the determination was unfounded, biased or capricious or there is new information available that was not available at the time of hearing which affects the disciplinary decision. In this case, students should submit a formal written appeal stating the grounds for appeal and relevant documentation to the Academic Integrity Council director within five calendar days of the notification of the decision. Upon receipt of the appeal, the Academic Integrity Council director convenes a review of the students’ actions by the Academic Integrity Council Executive Committee. The committee reviews the details of students’ actions and may ask to speak to the student, the instructor, the chair of the department offering the course, associate deans and others. The Academic Integrity Executive Committee reviews the appeal and makes a determination within five business days of receipt of the appeal. The Academic Integrity Council director provides a written statement to all parties concerned. The decision of the Academic Integrity Executive Committee is final. A copy of the decision is placed in students’ permanent confidential file located in the Office of the Registrar. The disciplinary response and procedure for incidents of academic dishonesty that do not lead to suspension or expulsion concludes at this step.

For actions involving campus-wide sanctions, such as suspension or expulsion, students have the right of appeal to the Office of the Provost. A formal written appeal stating the grounds for appeal and available documentation is submitted to the Office of the Provost within five business days of the notification of the Hearing Board’s decision. The provost or designee conducts a review of the appeal materials, may seek additional information, and may consult with the student, faculty, chair(s), associate dean(s), deans and others. The final decision to uphold or modify the action of the Hearing Board is provided to students and to the dean and associate dean of the students’ assigned college within fifteen business days of receipt of the appeal. A copy of the provost’s decision is placed in students’ permanent confidential file located in the Office of the Registrar. The decision of the provost is final.

Maintenance of Disciplinary Records
Records relating to academic misconduct are maintained by the Office of the Registrar in perpetuity. The university does not release student disciplinary records to any person and/or entity unless authorized to do so by the student in question or when allowed by law.

Professional Ethics and Standards
These procedures do not supersede or take the place of procedures established for students who violate professional standards applicable to a particular program, college or school. Separate procedures and/or outcomes may be invoked when students are found in violation of professional standards or codes of ethics related to special programs, licensure or certification as determined by the program’s external or internal professional requirements. Students have the responsibility to know and follow these standards/codes of ethics, which are part of their academic program. These special expectations and procedures, including the appeals process, are provided to students upon enrollment in their program and are available in published form in the administrative offices overseeing these programs.

Academic Performance
The Graduate School, as well as each academic unit, regularly evaluates the academic performance of its graduate students, adhering to the standards of Marquette University, the Graduate School, and the standards and requirements established by each academic unit and program. Students must earn acceptable grades and adhere to the requirements of academic honesty, professional integrity, and professional performance as well as continue to make satisfactory progress toward their degrees and meet the expectations of the Marquette University Student Conduct Code. The specific expectations related to each of these requirements are described at various points earlier in the Graduate School Bulletin and in the next section below.
Clinical Courses
By virtue of the special nature of clinical courses in health care and other human service fields, students are held to clinical and professional standards in addition to academic standards. If, in the opinion of the supervising faculty member, students are falling short of expected levels of performance or professional behavior, they may be removed immediately from the class. In many cases, students are counseled regarding the deficiency and are given an opportunity to retake the class. However, depending on the type and severity of the deficiency, students may be dismissed from their program and the Graduate School.

Satisfactory Progress Toward the Degree
Satisfactory academic work is not determined exclusively by course grades. All graduate degree students must also make substantial and visible progress toward their degrees. This includes successful completion of any required language examination that may be required, research or clinical training requirements, comprehensive or qualifying examination, thesis or dissertation. Failure to make continual and satisfactory progress toward a degree may result in dismissal.

Academic Censure
There are five categories of student performance problems that lead to some form of censure. These problems may be identified at any point during the academic year, though a systematic review of all students' course grades is also conducted at the end of each academic term. The review of other, non-course grade problems is typically conducted on an individual basis as issues arise. A finding of significant problems in any of these areas can result in a warning, probation, suspension, dismissal or expulsion, depending on the nature and severity of the problems identified. All of these statuses are maintained permanently on the academic record; only dismissal and expulsion, however, appear permanently on Marquette University’s official transcript. If students are reinstated following a dismissal, that notation also permanently appears on the official transcript. The statuses that appear permanently on the official transcript includes those listed (in bold type) below. Also listed are examples of applicable requirements.

- **Required to Withdraw for Academic Reasons** (e.g., failing to maintain a minimum GPA of 3.000; see the section below.)
- **Required to Withdraw for Academic Misconduct** (e.g., academic dishonesty; see Academic Integrity Policy (p. 28) in this section.)
- **Required to Withdraw for Non-Academic Reasons** (e.g., violations of the Student Conduct Code (http://www.marquette.edu/osd/policies/conduct/index.shtml/) on the Office of Student Development website.)
- **Required to Withdraw for Unsatisfactory Degree Progress** (e.g., failing to meet the 8-year time limit for completing a doctoral degree, a second failure on a comprehensive or qualifying exam; see the Satisfactory Progress Toward the Degree section above.)
- **Required to Withdraw for Professional Performance Reasons** (e.g., unsatisfactory performance in clinical programs; see Professional Performance Policy (p. 36) in this bulletin.)
- **Required to Withdraw for Professional Integrity Reasons** (e.g., violations of professional integrity or an applicable ethics code; see Professional Integrity Policy (p. 36) in this bulletin.)
- **Reinstated to the University on Probation** (i.e., following a successful appeal of a dismissal.)

Academic Grade Requirements
All students in the Graduate School are expected to maintain a minimum cumulative grade point average (GPA) of 3.000 in all Marquette course work. These are minimum standards for grades; individual programs may specify higher standards to which students are held by the programs. Any higher standards specified by individual programs are noted in program handbooks.

Academic Probation and Dismissal
Students who do not meet the GPA requirements listed below are academically dismissed (i.e., Required to Withdraw for Academic Reasons) and they are also found to have failed to meet the financial aid requirements for making Satisfactory Academic Progress. These students are dropped from any future terms in which they may be registered, are not eligible to receive financial aid, and are required to return any financial aid that may have been distributed since the grades were received.

- Students who have attempted 9 or fewer credit hours must maintain a cumulative GPA of at least 2.500.
- Students who have attempted more than 9 credit hours must maintain a cumulative GPA of at least 3.000.

Students who obtain a cumulative GPA of at least 2.500 but less than 3.000 in their first 9 attempted credits of course work are placed on Academic Probation and are notified that they are subsequently dismissed if they fail to raise their cumulative GPA to 3.000 by the time they attempt more than 9 credits of course work. Attempted course work includes courses in which grades of W (Withdrawal) or I (Incomplete) are obtained.

Students who receive an F, WF, U or UNC in any course, whether for credit or not, are either placed on probation or dismissed, even when their cumulative GPA is 3.000 or above. Depending on the nature and seriousness of the reasons for receiving the F, WF, U or UNC, students may be dismissed for failing to meet expectations for professional performance, professional integrity, academic honesty, or the other categories of withdrawal reasons noted above (including Required to Withdraw for Unsatisfactory Degree Progress). Students who are dismissed, are placed on Academic Probation (described below).
Students whose grades fall below 3.000 in any individual term, even though their cumulative GPA remains above 3.000, are notified of the potential for dismissal if their grades fall further. This notice does not affect students’ ability to register for courses for the next term, but is given to encourage students to avoid academic censure in the future.

Satisfactory Academic Progress (SAP): in addition to the above requirements, students must complete at least 75% of their cumulative credit hours attempted to retain eligibility for financial aid. The Office of Student Financial Aid conducts a review at the end of each spring term to identify students who fail to meet this requirement for Satisfactory Academic Progress. Students failing this requirement are allowed to continue at Marquette University, but they are not eligible to receive any federal financial aid unless their case is appealed and overturned (see appeals process below). Failing to meet this requirement is not an academic censure (unless it is also found to comprise unsatisfactory degree progress), but it is noted here because it can affect students’ ability to continue in their program. Refer to the Financial Aid Satisfactory Academic Progress policy (http://www.marquette.edu/mucentral/financialaid/resources_elig_standards.shtml) on the Office of Student Financial Aid website, which provides information on SAP.

Academic Probation: By the end of the second week of the probationary term, students on academic probation must submit to the Graduate School a detailed academic plan that specifies how they plan to address their academic deficiencies. The plan must be measurable and obtainable by the end of the term in which they are on probation.

By the final day of classes for the term in which students are on probation, they must demonstrate to their adviser or director of graduate studies that they have adhered to that plan. By the grade submission deadline, the adviser or director of graduate studies notifies the associate dean of the Graduate School as to whether the terms of the plan have been met.

The initial notice of academic probation may specify additional conditions that must be met in order for students to avoid additional academic censure following the term on which they are on probation.

Following the probationary term, the associate dean of the Graduate School informs students whether they have returned to good standing, the probation has been extended to a subsequent term, or they are required to withdraw for unsatisfactory degree progress.

Appeals

Students have the right to appeal the imposition of any sanctions due to unsatisfactory academic performance, findings of academic dishonesty, unsatisfactory professional integrity or performance or student misconduct. The point of appeal is dependent upon who has the responsibility for imposing the sanction. For example, cases of academic dishonesty are governed by Marquette University’s Academic Honesty Policy.

Appeal of Dismissal for Required to Withdraw for Academic Reasons

Students who have been dismissed for failing to meet the cumulative grade point requirements stated in the previous section may appeal the dismissal by completing and submitting one form which addresses both the Required to Withdraw for Academic Reasons (RWAR) and the Satisfactory Academic Progress (SAP) issues.

The dismissal/SAP appeal (Academic Censure) form is posted on the Marquette Central academic forms website (http://www.marquette.edu/mucentral/registrar/policy_forms.shtml) and includes all of the required information students must submit in order to have their appeal reviewed. The appeal form must include an academic plan that addresses how their academic deficiencies are to be addressed and how they can regain satisfactory academic standing. The plan must be measurable and ensure that students are able to meet Marquette’s academic standards by a specific point in time. The plan should include courses to be taken, expected grades, and a time frame to complete the outlined objectives. This plan requires the signature of the director of graduate studies (DGS) before it can be submitted to the Graduate School.

The completed appeal form is submitted to the associate dean of the Graduate School, the person who makes the final decisions on all RWAR/SAP appeals. If the appeal is approved, students are Reinstated on Probation and the DGS and the Graduate School monitors the plan that was specified on the appeal form. Students may also become eligible for financial aid at this time. During the subsequent academic term, however, should students not fulfill all of their obligations as outlined in the plan, they are evaluated by the Graduate School and a determination made regarding whether they may be allowed to continue in their program or placed on another term of probation.

Appeal of Dismissal for Required to Withdraw for Unsatisfactory Degree Progress

Within 10 calendar days after the date of the dismissal for unsatisfactory degree progress, students may appeal the decision by submitting the dismissal/SAP appeal (Academic Censure) form.

The dismissal/SAP appeal (Academic Censure) form is posted on the Marquette Central academic forms website (http://www.marquette.edu/mucentral/registrar/policy_forms.shtml) and includes all of the required information students must submit in order to have their appeal reviewed. The appeal form must include an academic plan that addresses how their academic deficiencies are to be addressed and how they can regain satisfactory academic standing. The plan must be measurable and ensure that students are able to meet Marquette’s academic standards by a specific point in time. The plan should include specific deliverables (e.g., dissertation chapters) and a time frame to complete the outlined objectives. This plan requires the signature of the student's director of graduate studies (DGS) before it can be submitted to the Graduate School.

The completed appeal form is submitted to the dean of the Graduate School. The dean of the Graduate School decides whether to hear the appeal alone or to convene a meeting of a subcommittee of the University Board of Graduate Studies (UBGS) to weigh the appeal materials and to obtain testimony delivered live to the subcommittee by the student and academic unit representatives. Situations dealing only with substandard academic
performance are typically considered by the dean, whereas issues dealing with an alleged violation of rights or procedures may be referred to a subcommittee of the UBGS. If referred to a subcommittee of the UBGS, the recommendation of the subcommittee as well as all materials provided to the subcommittee by the student and the academic unit are considered by the dean of the Graduate School, whose decision on the appeal is final.

If the appeal is approved, students are reinstated on probation and the DGS and the Graduate School monitors the plan that was specified on the appeal form. Students may also become eligible for financial aid at this time. During the subsequent academic term, however, should students not fulfill all of their obligations as outlined in the plan, they are evaluated by the Graduate School and a determination made regarding whether they may be allowed to continue in their program or placed on another term of probation.

Dismissed students may apply for readmission by following the procedures found in the Admission and Readmission section (p. 16) of this bulletin.

Appeal of Dismissal for Other (Non-GPA or Degree Progress) Reasons

Students dismissed for reasons other than cumulative grade point average, unsatisfactory degree progress or academic dishonesty may appeal their dismissal using the procedures described below. (Students dismissed due to unsatisfactory cumulative grade point average may appeal their dismissals using the procedure described in the section above, and students who are dismissed due to academic dishonesty may appeal their dismissals according to the policy outlined below or via the process outlined in the Academic Integrity Policy (p. 28) in this section.)

Within 10 days after the date of the dismissal for reasons other than cumulative grade point average, unsatisfactory degree progress or academic dishonesty, students may appeal the decision by submitting a letter of appeal to the dean of the Graduate School. The dean of the Graduate School decides whether to hear the appeal alone or to convene a meeting of a subcommittee of the University Board of Graduate Studies (UBGS) to weigh the appeal materials and to obtain testimony delivered live to the subcommittee by the student and academic unit representatives. Situations dealing only with substandard academic performance are typically considered by the dean, whereas issues dealing with an alleged violation of rights or procedures may be referred to a subcommittee of the UBGS. If referred to a subcommittee of the UBGS, the recommendation of the subcommittee as well as all materials provided to the subcommittee by the student and the academic unit are considered by the dean of the Graduate School, whose decision on the appeal is final.

Dismissed students may apply for readmission by following the procedures found in the Admission and Readmission section (p. 16) of this bulletin.

Academic Programs Defined

This policy (http://bulletin.marquette.edu/undergrad/academicregulations/#academicprogramsdefined) defines and outlines all academic programs at Marquette University. The full policy appears only once in the bulletin. While the link directs to the Undergraduate Bulletin, the definitions are universal to Marquette and therefore apply to Graduate programs as well.

Advising

Departments assign students their advisers. Students are encouraged to contact their department for identification of the assigned adviser and for advising prior to registration. All students should meet or talk with the adviser before registering for classes. The Graduate School strongly recommends that students meet regularly with their advisers; an adviser plays an important role in graduate students’ course of study. An adviser’s signature is required on most forms submitted to the Graduate School and students’ programs of study are not valid until it has been approved by both the adviser and the Graduate School. Students who want to change advisers should check with their department for additional information and instructions.

Non-degree and temporary graduate students are normally not assigned academic advisers. Students in these categories who need assistance should contact the department in which they are focusing their course of study.

Assistantships and Fellowships

All graduate students who receive merit-based graduate assistantships and fellowships must be full-time students in the term in which they receive the aid. All graduate students who receive merit-based scholarships from the Graduate School are not required to be registered full time. For assistantships, full-time status can be achieved by registering for a minimum of 7 credit hours or by taking six credits of course work plus the appropriate continuous enrollment course, such as Graduate Assistant Teaching, Graduate Assistant Research or Graduate Fellowship, depending on the award received. These zero-credit continuous enrollment courses carry the status of full-time when combined with six credits of course work.

The following course numbers are used in conjunction with the department acronym:

- Graduate Fellowship (full-time, FT) = 9974
- Graduate Assistant Teaching (full-time, FT) = 9975
- Graduate Assistant Research (full-time, FT) = 9976

Students may use their assistantship funding to pay for Graduate Assistant Teaching, Graduate Assistant Research or Graduate Fellowship course fees. It is not required that all TAs and RAs be registered for one of these continuation courses; if a student already meets full-time status based on course work, then these continuation courses need not be used to obtain full-time status.
If teaching and research assistants and recipients of scholarships or fellowships need continuous enrollment, they must register for the appropriate continuation course. These courses are graded on an SNC/UNC basis. Registration requires the consent of their adviser and department, which must be secured prior to registering.

Registration requires the following procedures:

1. Students and their advisers meet and complete the appropriate registration form.
2. Students sign the form, in part giving the Graduate School permission to enroll them.
3. The appropriate departmental designee signs the form.
4. The completed and approved form is delivered to the Graduate School, who registers students for the course.

**Attendance**

**Faculty Responsibility**

Taking attendance is not required by the university, except on the first class meeting following the deadline to Add/Drop, as noted in the Academic Calendar (http://www.marquette.edu/mucentral/registrar/cal_index.shtml), in order to comply with Federal regulations. Faculty must then notify the Office of the Registrar of students not in attendance via the Single Course Swap/Withdrawal: Faculty/Administrator Initiated form, located in the Faculty Center in CheckMarq (https://checkmarq.mu.edu/psp/sa9prod/EMPLOYEE/HRMS/?cmd=logout). In addition, students may not attend classes if not registered, and it is the responsibility of the faculty to inform students of this. Faculty may set their own class attendance policy in their syllabus, in accordance with department guidelines or requirements.

**Special Allowances**

Students with absences due to legal obligations, religious observance or participation in Division 1 athletics and other university-sponsored events should be given an opportunity to make up examinations or other graded assignments if a request is made to the instructor prior to the absence.

**Grades Associated with Attendance**

Certain grades are associated with attendance and are assigned to students according to the criteria as described in the grading system policy.

**Awarding Diplomas and Certificates**

This policy (http://bulletin.marquette.edu/undergrad/academicregulations/#awardingdiplomasandcertificates) defines and outlines the process for approval and distribution for all official Marquette University certificates and diplomas. The full policy appears only once in the bulletin. While the link directs to the Undergraduate Bulletin, the definitions are universal to Marquette and therefore apply to Graduate programs as well.

**Background Checks, Drug Testing**

Some degrees, majors and/or courses may require students to submit to a criminal background check and/or drug testing. The results of those checks and/or tests may affect eligibility to continue in that degree and/or course.

**Certificate Concurrent Enrollment**

Students may concurrently enroll in more than one certificate, and, in some cases, courses may be used to satisfy the requirements of more than one certificate, as outlined in the university bulletins for each certificate.

If a master’s program permits students to also earn a certificate, admission to both programs may be concurrent. The same courses may be used to satisfy the requirements of the master’s program and certificate, as outlined in the university bulletin for each program. Students are expected to be admitted into all programs they intend to complete, although course work completed prior to admission may be allowed to apply toward program requirements.

Certificates must be approved individually via the curriculum approval process as Title IV aid eligible in order for students in any of these programs to receive federal financial aid.

**Commencement**

Commencement at Marquette is a symbolic ceremony provided for students, faculty and families in celebration of our students’ accomplishments. Following is the policy regulating participation in the University Commencement.

1. Marquette offers one Commencement per year. Commencement is held in May, following the spring term.
2. Spring Graduates:
   - Undergraduate/Master’s/Health Sciences Professional students: Students who are in good academic standing, meet the appropriate graduation application deadline and complete all degree requirements, including the official recording of any transfer work/credit by the end of the spring term, may participate in Commencement held in the same calendar year.
• Dental students: Students who are in good academic standing, meet the appropriate graduation application deadline and complete all degree requirements, including the official recording of any transfer work/credit by the end of the spring term, participate in Commencement held in the same calendar year.

• Doctoral students: Candidates must meet the appropriate graduation application deadline, ensure all transfer work/credit is officially recorded, successfully defend their dissertation, receive approval by their Dissertation Committee for any required revisions, submit their dissertation to the Graduate School and receive approval of the dissertation format by the Graduate School before the published deadline in order to participate in the Commencement held in the same calendar year.

• Law students: Students who are in good academic standing, meet the appropriate graduation application deadline and complete all degree requirements, including the official recording of any transfer work by the end of the spring term, participate in Commencement and are hooded and honored at the May Law School Hooding Ceremony of the same calendar year.

3. Summer and Fall Graduates:
• Undergraduate/Master's/Health Sciences Professional students: Students who are in good academic standing, meet the appropriate graduation application deadline and complete all degree requirements, including the official recording of any transfer work/credit after the Commencement of a given year, may participate in Commencement held in the same calendar year, or may choose to participate in the Commencement held in the following calendar year.

• Doctoral students: Candidates who complete their degree/dissertation (see 2. above) after Commencement of a given year, may be hooded and honored at a December Hooding Ceremony hosted by the Graduate School, or may choose to participate in Commencement held the following May.

• Law students:
  - Summer graduates: Students who are in good academic standing, meet the appropriate graduation application deadline and complete all degree requirements, including the official recording of any transfer work in the summer term after Commencement of a given calendar year, may participate in Commencement of the same calendar year, or may choose to participate in the Commencement held in the following calendar year.
  - Fall graduates: Students who are in good academic standing, meet the appropriate graduation application deadline and complete all degree requirements, including the official recording of any transfer work by the end of the fall term may be hooded and honored in the December Hooding Ceremony, hosted by the Law School in the same calendar year; or may choose to participate in Commencement and be hooded and honored at the May Hooding Ceremony, hosted by the Law School in the following calendar year.

4. The Commencement program is accurate as of the day it is printed and changes may be made to students' academic records, despite the information contained therein, if the information changes after final grades and degree audits are completed.

5. Students' names and degrees appear in the Commencement Program in which they participate, regardless of the term in which they graduate.

6. Degree conferral is certified by the official Marquette transcript noting the degree completion. Receipt of a diploma, participation in the Commencement ceremony or the names of students and degrees listed in the Commencement program do not constitute certification of degree conferral.

7. Any exceptions to this policy must be approved by the provost.

Commencement Notification
The Office of the President sends one invitation/announcement to the name indicated on the Graduation Application graduating students submit online via the Student Center in CheckMarq (https://checkmarq.mu.edu/). However, there is no limit to the number of family members and friends who may attend the university-wide Commencement exercises; tickets are not needed. For further information on the university-wide ceremony, contact University Special Events at (414) 288-7431 or visit the Commencement website (http://www.marquette.edu/commencement/). Department Commencement ceremonies, if occurring, may require tickets. For further information on department ceremonies, contact the appropriate department office.

Conduct
Professional Integrity
To function properly and maintain high standards, academic and professional disciplines expect members to adhere to standards of conduct and professionalism. Marquette expects its graduate students, from the beginning of their work at Marquette, to demonstrate the utmost personal integrity and the highest standards of professionalism, including adherence to any commonly recognized codes of conduct or professional standards in graduate students' disciplines. In dealing with the public or campus community, in clinics, practica, internships, classrooms or elsewhere, graduate students must adhere to these standards. Violations of these standards may be grounds for dismissal or other penalties.

Professional Performance
All students in professional, laboratory, or clinical settings must maintain fully professional behavior at all times. If, in the judgment of the academic unit, students are not living up to the non-academic standards, and that deficiency is a first offense or an offense deemed to be less serious in nature, a warning letter may be issued by the department. If, however, the unsatisfactory behavior is a repeat offense or is more serious in nature, a recommendation may be made to the dean of the Graduate School that these students be dismissed from the graduate program.
Student Conduct Code and Procedures

Graduate students are responsible for complying with the regulations and/or procedures of the Graduate School or the Graduate School of Management, as applicable, as well as those set forth in the online handbook (https://www.marquette.edu/student-development/policies/). Violations of regulations found in the student handbook are administered by the Office of Student Development. If there is a conflict between the two applicable regulations or procedures, the Graduate School's governs. If there are multiple components to the case, they may be separated and reviewed independently by the appropriate authorities.

Confidentiality of Proprietary Information

The university recognizes that the primary purpose of research and scholarship is to train future scholars and disseminate new knowledge for the benefit of humankind. However, commercially valuable inventions and discoveries also may result. Graduate students, during the course of their studies and work at the university, may receive access to confidential or proprietary information from the university, its faculty and employees, and/or private companies. Students, both while a student and thereafter, are expected to respect and maintain the confidentiality of such information. In certain unusual cases, students may be asked to sign an additional confidentiality agreement. Unauthorized use or dissemination of another’s confidential or proprietary information is subject to appropriate legal recourse and/or academic discipline, including termination from the program.

Continuous Enrollment

All graduate students in degree status must enroll in either: adviser-approved course work; thesis, professional project, or dissertation credits; one of the continuation courses; or a combination of these every fall and spring term until graduation to maintain their graduate student status, unless all degree requirements are complete and a graduation application has been submitted. Graduate students who intend to graduate in August must enroll in one of the above courses prior to the summer term prior to their graduation. Students who fail to register for one of these terms is automatically discontinued and must apply for readmission. Readmission requires departmental consent and the payment of all fees in arrears. Continuation courses allow those graduate students who have completed their degree requirements but are still working on their thesis, project or dissertation to be considered full-time, half-time or less than half-time.

All graduate students, except those with non-degree status, must be enrolled each fall and spring term to maintain their status. Registration in the summer is only required if students intend to graduate in August. All degree-seeking graduate students must enroll in adviser-approved academic course work; independent study; field placement; graduate assistant teaching or research; thesis, professional project, or dissertation credits; comprehensive exam preparation; or graduate standing continuation credits. Degree-seeking students who are still completing degree requirements and fail to enroll for a fall or spring term are discontinued and must request readmission via email to the Graduate School. This request must be accompanied by the endorsement of the department.

Thesis, Dissertation, or Professional Project Continuation

Students who have completed all credit requirements for their degree but need to continue work on their thesis, dissertation or professional project may retain graduate status by enrolling in Master’s Thesis Continuation (9994/9995/9996), Doctoral Dissertation Continuation (9997/9998/9999), or Professional Project Continuation (9991/9992/9993). Each of these non-credit courses allows students to be considered the equivalent of full–time (a minimum of 7 equivalent credit hours), half-time (a minimum of 4 equivalent credit hours), or less than half-time (3 or fewer equivalent credit hours). Students’ status is dependent on the contact hours/amount of course work expected of students/faculty during the term, as outlined in the university policy, that guides the awarding of credit. (See the Credit section of this bulletin). Registration for Master’s Thesis Continuation, Doctoral Dissertation Continuation, or Professional Project Continuation requires completion of a registration form, identification of the type and amount of work to be done, and the approval of the adviser or thesis/dissertation director (and director of graduate studies or chair if required by departmental policy).

Field Placement Continuation

Students who have completed all credit requirements for their degree but still must participate in a practicum or internship experience may retain graduate status by enrolling in Field Placement Continuation (9977/9978/9979). This non-credit offering allows students to be considered full-time, half-time, or less than half-time depending on the amount of work being devoted to their placement each term. Registration for Field Placement Continuation requires the consent of the adviser or thesis/dissertation director (and director of graduate studies or chair if required by departmental policy) and completion of a registration form outlining the number of hours students plan to devote to the Field Placement Continuation.

Graduate Assistantships

Graduate assistants who enroll in six academic credits in a term and enroll in a non-credit Graduate Assistant Teaching (9975) or Graduate Assistant Research (9976) course are considered full-time students. Graduate fellows may enroll in six academic credit hours plus a non-credit Graduate Fellowship course (9974) to maintain full-time status.

Comprehensive Exam Preparation

Students who are preparing for comprehensive exams may retain graduate status by enrolling in the appropriate Master’s Comprehensive Exam Preparation course (9984/9985/9986) or Doctoral Comprehensive Exam Preparation course (9987/9988/9989). These zero-credit courses are graded on an SNC/UNC basis, and they may be taken alone or in conjunction with credit courses.
The Comprehensive Exam Preparation course is normally taken during the term in which the student anticipates taking the exam. Though it is generally taken only once, if students either fail the exam or for some reason do not take the exam, students may register for Comprehensive Exam Preparation course for a second term.

Graduate Standing Continuation

Students who are not able to take academic courses in a particular session, but need to maintain active academic status, may take a zero-credit course entitled Graduate Standing Continuation (9970). This offering is designed to allow graduate students to engage in such activities as completing projects, theses, dissertations or preparation for comprehensive examinations when these activities are not addressed by other enrollment statuses. This option is designated as less than half-time, cannot be used in conjunction with other courses, and does not qualify students for financial aid.

Continuation Course Registration Procedures

All continuation courses shall be graded Satisfactory (SNC) or Unsatisfactory (UNC) and charged at the stated fee by the Office of the Bursar as listed in the Tuition, Fees and Housing section of this bulletin. Any needed registration forms can be found on the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml). Registration is as follows:

The appropriate registration form must be approved by the adviser and director of graduate studies/chairperson, and students must have registered for the course on or before the deadline to Add/Drop, as per the Graduate Academic Calendar (p. 21).

Enrollment information may not be accurate for students who are not registered by the deadline to Add/Drop and may affect requests for information provided through the Office of the Registrar (such as enrollment verification requests from lending institutions, insurance companies, etc.).

Students enrolling in one of these courses must register to activate their desired status. Registration requires the consent of the adviser and department, which must be secured prior to registering.

Registration requires the following procedures:

1. Students and their adviser meet and complete the appropriate registration form.
2. Students sign the form, in part giving the Graduate School permission to enroll them.
3. The appropriate departmental designees sign the form.
4. The completed and approved form is delivered to the Graduate School, who registers students for the course.

Courses and Prerequisites

1. The prerequisites for any graduate program include an undergraduate degree or major which qualifies students for either research or academic work at advanced levels.
2. The courses described for each program are graduate offerings. These are numbered 6000-9999. Courses numbered 5000-5999 are courses that are taken for graduate credit, cross-listed with 4000-level undergraduate courses. The last three digits and titles of the 4000-level and the 5000-level cross-listed courses are identical. Prerequisites for undergraduate 4000-level courses, found in the Undergraduate Bulletin, may also be required for the 5000-level cross-listed courses. Undergraduates who anticipate eventual graduate academic work are eligible to take 5000-level courses.
3. Some courses are listed with a variable number of credits (e.g., 1-3 credit hours). Usually the department or college determines the specific number of credits for these courses each term. This information is published in Marquette Class Search or CheckMarq (https://checkmarq.mu.edu/psp/sa9prod/EMPLOYEE/HRMS/?cmd=logout/) prior to registration for each term. For a few variable credit courses, (e.g., master's thesis, doctoral dissertation) the bulletin indicates the possible number of credits which might be taken during a given term. Students should consult with their adviser before registering for these types of classes to determine the appropriate number of credits for which to enroll.
4. The specific courses offered during any given term are listed on CheckMarq for that term.

Course Load

The maximum academic course load for graduate students is 14 semester hours of course work for fall or spring term. Residents in the graduate dental programs have higher limits, as do students in the graduate nursing programs. Seven hours are the maximum permitted for each of the summer sessions but no more than 14 credits for the entire summer term. Teaching or research assistants may register for a maximum of ten semester hours each fall or spring term and seven hours for each of the summer sessions. Overloads must have the approval of the Graduate School on the Credit Overload Request form, available on the Marquette Central academic forms website (http://www.marquette.edu/mucentral/registrar/policy_forms.shtml).

Credit

The semester hour is the unit of academic credit used by Marquette University. The following is based on the University Course Scheduling/Contact Hours policy (https://www.marquette.edu/mucentral/registrar/faculty/CourseScheduling.shtml), which outlines the minimally required contact hours for classes and is based on a 15-week term:

1. Classroom Based Courses: must meet a minimum of 50 minutes per credit, per week. In addition, it is expected that an additional workload will be assigned to equal 2 hours of course work outside the classroom for each 50 minutes of meeting time (e.g., a total of 170 minutes per credit, per week).
2. Blended and Non-Classroom Based Courses: must include some form of instruction, and/or homework, and/or activity that equals a minimum of 170 minutes per credit, per week.

3. Those courses that meet in a compressed format (i.e., fewer than 15 weeks), must make up the minimum of 170 minutes per credit, per week within the time frame of the course offering.

Semester hour credit is given only in accordance with descriptions for individual courses, as published in the Graduate Bulletin. No credit is given for a course in which students never register (i.e., the university does not retroactively register students in courses).

**Cross-listed Courses**

Cross-listed courses are two courses with closely-related content that have been approved at different levels of instruction (for example, undergraduate and graduate levels). Students in cross-listed courses must be provided learning opportunities commensurate with the degree they are pursuing. Accordingly, cross-listed courses should include learning outcomes that clearly describe and distinguish the expectations of undergraduate and graduate students. These outcomes may be overlapping and/or represent different levels of engagement with the same content, but they must be communicated explicitly for undergraduate and graduate students. Courses may be differentiated through assignments (what students are producing as part of the course), assessments (how students are evaluated), and/or evaluation criteria (expectations for acceptable performance), all of which must be aligned with the learning outcomes. The learning outcomes and aligned assignments, assessments and evaluation criteria for each level of a cross-listed course must be included in the syllabus and clearly communicated to students. This policy conforms to the Higher Learning Commission’s Criteria for Accreditation, which obliges courses and programs to require levels of performance by students appropriate to the degree awarded.

**Deadlines**

All graduate students are responsible for ascertaining and meeting all deadlines listed in the Academic Calendar (p. 21). This includes, but is not limited to: deadlines for registration, dropping/withdrawing from courses, graduation applications, comprehensive exams, theses, essays, projects and dissertations.

**Diplomas**

Diplomas are typically distributed at the May Commencement ceremonies for eligible spring graduates. Any special arrangements for the mailing or pick-up of May diplomas must be made using the Diploma/Certificate Request forms on the Marquette Central academic forms website (http://www.marquette.edu/mucentral/registrar/policy_forms.shtml/). Diplomas for students graduating in summer or fall are only available for pick up or by mail, as requested by students in the same manner.

**Enrollment Changes**

This section applies to all sections below: Adding Courses, Dropping/Withdrawing from Courses and Withdrawing from All Courses for a Term.

Students are responsible to ensure that their course schedule for each term accurately reflects the courses they plan to attend. Students may not attend courses in which they are not officially registered in CheckMarq. Changes in enrollment are under the jurisdiction of the Graduate School. Most enrollment changes, i.e., adding and withdrawing from courses, can be done using the online registration system (CheckMarq) prior to the deadline to Add/Drop/Swap in which the class is offered, as indicated in the Academic Calendar. Instructions for adding or withdrawing from courses are available on the Course Registration page (http://www.marquette.edu/mucentral/registrar/reg_index.shtml/) of the Marquette Central website. Instructions for using CheckMarq are available on the Student Self-Service instructions (https://www.marquette.edu/central/registrar/how-do-i-register-for-classes-in-checkmarq.php) page of the Marquette Central website.

Students must be registered by the deadline to Add a class for each session in which a class is offered, as outlined in the Academic Calendar (http://bulletin.marquette.edu/grad/academiccalendar/). The university does not retroactively register students for courses after the deadline to register for any session and reserves the right to deny credit to any student who fails to officially register in any course within these time limitations. All courses for which the student is registered are subject to tuition and in some cases, additional fees. The student is responsible for any payment due on all officially registered courses, regardless of attendance.

After the deadline to Add/Drop/Swap for each session, students must notify the Graduate School office directly and complete appropriate forms before any enrollment change is effective. Once a permanent grade is assigned, it is not be changed except for institutional error or policy.

Federal financial aid regulations require that the university submit notification of all changes in status by students (full-time to half-time, etc.) to the U.S. Department of Education via the National Student Loan Data System within a certain time frame. The university therefore reserves the right to withdraw students from any class when it is evident they did not start the class (grade of UW); stopped attending the class (grade of WA or WF, as appropriate-see Grading section below); or, due to incapacity, must be withdrawn from the class (grade of W). This policy is in effect for all students, regardless of any financial aid award.

Failure to officially withdraw from classes, or the university, according to established deadlines in the Academic Calendar, (http://bulletin.marquette.edu/undergrad/academiccalendar/) the procedures referenced below and the timelines, as published by the Bursar's Office (http://www.marquette.edu/mucentral/bursar/withdrawal_index.shtml/), does not relieve students of their responsibility to pay for any tuition/fees owed for such classes. In addition, if students cease attendance by dropping, withdrawing or for any other reason from all federal aid eligible courses in a payment period, those students must be considered withdrawn for federal aid purposes. Students' financial aid is adjusted as required by federal and state refund calculations and
机构的政策，根据学生所在学院的最后出勤日期。学生们的退学是根据大学的国家学生贷款数据系统来确定的。当任何贷款延期需要在退学时取消时。最后，决定退学日期的日期用于计算任何学费退款。

### 添加课程

学生必须在截止日期前添加/删除课程时提交一个要求添加课程的表单，可以在学术日历(http://bulletin.marquette.edu/undergrad/academiccalendar/)。新课程不得添加到学生的注册中，除非在学术日历中完成了一个要求添加课程的表单，由课程的主讲教师签字，然后发送给研究生办公室。晚报到不保证。因为截止日期未被错过，研究生办公室保留拒绝的权力，基于学生注册的特殊情况。在晚报名情况下，注册表单是在研究生办公室提交的。

### 撤销/删除课程

学生应于截止日期前撤销或删除一门或数门课程。在添加/删除截止日期前，学生决定删除课程后，必须通知研究生办公室。在研究生办公室批准的情况下，此要求的撤销或删除不得删除。学生必须在截止日期前完成注册。在截止日期后，课程不得提交，除非在学术日历中已删除。课程的删除不得经由大学的国家学生贷款数据系统取消。

### 退学

任何学生，包括TAs，都不得被正式注册，除非在研究生办公室批准的情况下。在研究生办公室批准的情况下，此要求的删除或删除不得删除。学生必须在截止日期前完成注册。在截止日期后，课程不得提交，除非在学术日历中已删除。课程的删除不得经由大学的国家学生贷款数据系统取消。
Grade Appeals

All grade appeals are heard for the Graduate School by the school or college that teaches the course, following the rules of that school or college. Their decision is final, and no further appeal is available. In schools or colleges with a departmental structure, the appeal procedure usually begins with the department chairperson.

Grading System

The following letter grades and their achievement equivalents are used by instructors in the Graduate School to evaluate students' performance in a course. Grade points corresponding to each letter grade determine the grade point average and eligibility to graduate. Each grade, A through F, has a specific grade point value. The grade points earned in any course equal the grade point value of the grade multiplied by the number of semester hours credited. The grade point average (GPA) is found by dividing the total grade points earned by the total number of semester hours credited in those courses for which grade points have been assigned. Determination of the cumulative GPA is based on all courses taken during students' graduate career, including prerequisite and repeated courses, if any. Note: Credits that are accepted for a Marquette degree, if transferred from another university, are not included when calculating the GPA. The official Marquette GPA of all students is calculated by the student information system and this GPA is not rounded up or down for any reason.

All graduate students must maintain a grade point average of at least 3.000 to graduate. (For the effect of F, WF, U and UNC grades, refer to Academic Review.) Graduate students may not be assigned a C-, D+ or a D grade in any course whatsoever, including undergraduate courses.

Letter grades, with or without grade points, are used by Marquette faculty to evaluate students' performance in a course. All grades described below, with the exception of the I, IC and IE are permanent grades. No additional work for the purpose of changing a permanent grade may be submitted by students after the last day of the session in which the class is offered. Likewise, no additional work for the purpose of changing temporary grades of I, IC or IE may be submitted by students after the deadline to change these temporary grades, as indicated in the Academic Calendar.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Achievement</th>
<th>Grade Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Superior</td>
<td>4.00</td>
</tr>
<tr>
<td>A-</td>
<td></td>
<td>3.67</td>
</tr>
<tr>
<td>B+</td>
<td>Good</td>
<td>3.33</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>3.00</td>
</tr>
<tr>
<td>B-</td>
<td></td>
<td>2.67</td>
</tr>
<tr>
<td>C+</td>
<td>Minimally acceptable on a limited basis for graduate credit</td>
<td>2.33</td>
</tr>
<tr>
<td>C</td>
<td>Not approved for graduate students</td>
<td>2.00</td>
</tr>
<tr>
<td>C-</td>
<td>Not approved for graduate students</td>
<td></td>
</tr>
<tr>
<td>D+</td>
<td>Not approved for graduate students</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Not approved for graduate students</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Failure</td>
<td>0.00</td>
</tr>
<tr>
<td>WF</td>
<td>Failure</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Grade points are not affected by the following grades:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Defined</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADW</td>
<td>Administrative Withdrawal; withdrawn from the course for administrative reasons, as determined by approved personnel of the university, including but not limited to the dean, or personnel of a committee involved in formal hearing and/or appeal process.</td>
</tr>
<tr>
<td>AU</td>
<td>Audit; excluded from attempted credits.</td>
</tr>
<tr>
<td>AUA</td>
<td>Audit; included in attempted credits.</td>
</tr>
<tr>
<td>CR</td>
<td>Credit; equivalent work of C or better.</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete; a temporary grade assigned on a pre-arranged basis indicating inability to complete the course and/or take the final exam, due to circumstances beyond the control of the student; and, therefore, completion of assignments/exam are allowed after the term has ended.</td>
</tr>
<tr>
<td>IC</td>
<td>Course Incomplete; a temporary grade indicating the course is not completed by the end of the term in which the course is scheduled.</td>
</tr>
<tr>
<td>IE</td>
<td>Incomplete Extension; a temporary grade indicating an extension to the I grade removal deadline; assigned by the college office to those students who, due to circumstances beyond their control were unable to complete the required work by the I grade removal deadline.</td>
</tr>
<tr>
<td>NC</td>
<td>No Credit; equivalent work of less than C.</td>
</tr>
<tr>
<td>NG</td>
<td>No grade; a temporary grade indicating grades were not entered by the grading deadline for the session in which the class was offered; a grade change is required.</td>
</tr>
<tr>
<td>SNC</td>
<td>Satisfactory completion; equivalent work of C or better in a course bearing no credit.</td>
</tr>
</tbody>
</table>
Academic Regulations

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNC</td>
<td>Unsatisfactory completion; equivalent work of less than C in a course bearing no credit.</td>
</tr>
<tr>
<td>S</td>
<td>Satisfactory completion; equivalent work of C or better in a credit bearing, competency-based course.</td>
</tr>
<tr>
<td>SY</td>
<td>Satisfactory completion; equivalent work of C or better in the first term of a series of year-long courses, where grades are assigned only in the final course in the series.</td>
</tr>
<tr>
<td>U</td>
<td>Unsatisfactory completion; equivalent work of less than C in a credit bearing, competency-based course.</td>
</tr>
<tr>
<td>UW</td>
<td>Unexcused withdrawal; withdrawal initiated by the faculty or college office when a student registered for a course, never attended and failed to officially withdraw.</td>
</tr>
<tr>
<td>UY</td>
<td>Unsatisfactory completion; equivalent work of less than C in the first term of a series of year-long courses, where grades are assigned only in the final course in the series.</td>
</tr>
<tr>
<td>W</td>
<td>Official withdrawal; withdrawal initiated by the student, with approval of the Graduate School dean.</td>
</tr>
<tr>
<td>WA</td>
<td>Withdrawn-Excessive Absences; withdrawal initiated by the faculty or college office due to excessive absences in the course.</td>
</tr>
</tbody>
</table>

Clarification of Grades

ADW Grade

Students who are administratively withdrawn from the university receive this grade in all classes for the term/session. Likewise, students who are administratively withdrawn from a single class receive this grade. Administrative withdrawal is an action normally taken by the university for disciplinary, conduct, lack of professional competence or academic reasons other than low grades or lack of degree progress. This grade is assigned by the Graduate School or the Office of the Registrar, depending on the reason and the office requesting the administrative withdrawal. This grade takes precedence over any other grade assigned to the student. Submission of a last date of attendance is required for this grade.

Students assume responsibility for all consequences that ensue as a result of receiving any withdrawal grade. These consequences may include, but are not limited to: a delay in graduation, external institutions/agencies viewing these grades as failing grades, loss of eligibility for certain scholarships and/or financial aid, loss of full-time status and/or loss of a refund.

Audit

Students must first register for a course via CheckMarq, then request the audit option from the Graduate School. The Audit Request Form is located on the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml). The deadline to request the audit option for each session is listed on the Academic Calendar (p. 21). Students who request this option prior to the deadline for the session in which the class is offered are assigned the AU grade; students who request this option after the deadline for the session in which the class is offered are assigned the AUA grade. The AUA grade affects the ability to repeat a class and may affect satisfactory academic progress. Classes being audited are not charged at the normal tuition rate. Refer to the Tuition, Fees and Housing section (p. 62) of this bulletin for information on tuition rates.

C-, D+ and D Grades

These grades are not approved for graduate students, including those students enrolled in undergraduate courses.

CR/NC Grading

Under no circumstances may the undergraduate CR/NC option be exercised by a graduate student taking an undergraduate course for graduate credit.

S/U Grading

Students required to take undergraduate courses as prerequisites or to remedy deficiencies may not use this S/U grading option.

However, a few select graduate courses are offered for S/U grades only. Courses of this type usually are limited to practica, department colloquia or special seminar courses. Students should check the individual course descriptions in this bulletin and the grading basis when conducting a class search in CheckMarq to determine whether a course is offered on this basis.

For the effect of U grades, refer to Academic Review.

UW Grade

This grade is assigned when the withdrawal is initiated by the faculty or college office because students registered for a course, never attended and failed to officially withdraw. The fact that students do not attend class, does not relieve them of the obligation to pay any tuition and/or fees that are due.

Students assume responsibility for all consequences that ensue as a result of receiving any withdrawal grade. These consequences may include, but are not limited to: a delay in graduation, external institutions/entities viewing these grades as failing grades loss of eligibility for certain scholarships and/or financial aid, loss of full-time status and/or loss of the 100% refund. Refund calculation for this grade is based on the date the university is first informed of the non-attendance.
W Grade
This grade is assigned when the withdrawal is initiated by students, as per the deadline in the Academic Calendar. This grade is not assigned after the session in which the class is scheduled has ended. Submission of a last date of attendance is required with this grade. This is a permanent grade and cannot be changed or overwritten, except as described in the ADW section above.

Students assume responsibility for all consequences that ensue as a result of receiving any withdrawal grade. These consequences include, but are not limited to: a delay in graduation, external institutions/entities viewing these grades as failing grades, loss of eligibility for certain scholarships and/or financial aid, loss of full-time status and/or loss of a refund.

WA Grade
This withdrawal is initiated by the faculty or college office and is assigned due to excessive absences in the course, as outlined in the syllabus. This grade is not assigned after the last day of the session in which the class is scheduled. This grade is always assigned if the withdrawal is initiated prior to the deadline to withdraw for the class in which a session is scheduled, as outlined in the Academic Calendar. If initiated after the deadline, students receive the grade earned at the time (a WA or a WF, as indicated in the syllabus). Submission of this grade requires a last date of attendance/activity. This is a permanent grade and cannot be changed or overwritten, except as described in the ADW section above.

Students assume responsibility for all consequences of this grade, which may include, but are not limited to: a delay in graduation, denial of readmission, external institutions/entities viewing these grades as failing grades, loss of eligibility for certain scholarships and/or financial aid, loss of full-time status and/or loss of a refund.

WF GRADE
This grade is assigned under two circumstances and is calculated into the grade point average as the grade of F:

1. When students initiate a withdrawal after the deadline to withdraw, as outlined in the Academic Calendar (http://www.marquette.edu/mucentral/registrar/cal_index.shtml/).

2. When the faculty and/or college initiates a withdrawal after the last day to withdraw, as outlined in the Academic Calendar, if: (1) students exceed the faculty's absence policy in the syllabus; or, (2) students abandon the class. In these cases, for those students passing the class at the time of the withdrawal, the faculty may assign the WA or WF grade, depending on the grading criteria of the syllabus; however, students who are failing the class at the time of this withdrawal must be assigned a WF.

In all cases, this withdrawal is not permitted after the last day of the session in which the class is scheduled. Submission of this grade requires a last date of attendance/activity. This is a permanent grade and cannot be changed or overwritten at any time, except as described in the ADW section above.

Students assume responsibility for all consequences of this grade, which may include, but are not limited to: a delay in graduation, denial of readmission, external institutions/entities viewing this grade as failing, loss of eligibility for certain scholarships and/or financial aid, loss of full-time status and/or loss of a refund.

Grade Changes
There are two types of grade adjustments: changing of a temporary grade (I, IC or IE) to a permanent grade and correcting a permanent grade.

Temporary Grades — I, IC, IE
Graduate students who do not complete course requirements during the term in which the class is offered may be given one of two temporary grades: an I when the course work and/or final examination has not been completed; an IE, when the removal of an I grade deadline extension is needed.

The I grade is only approved for these conditions: students are unable to complete the course and/or take the final exam due to circumstances beyond their control, the I grade is approved by the faculty member prior to the grading deadline for the term in which the course is offered, and the performance merits this exception. If these conditions are not met, the instructor must assign the grade reflecting both the quality of the work completed and the significance of the work/exam that has not been completed.

The IE grade is only approved for these conditions: students are unable to complete the course and/or take the final exam due to circumstances beyond their control by the deadline to remove the I grade and the extension has been approved via students’ request prior to the deadline to remove the I grade, as published in the Academic Calendar (p. 21). The Request for Extension of I Grade Deadline is located on the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/).

The IC grade is issued when courses extend beyond the grading period of the term in which the class started and is assigned to all students in the class, i.e., may not be used for individual students in a class with more than one student enrolled.

It is the responsibility of the faculty member to submit grade changes via the online grade change process, located in the Faculty Center in CheckMarq (https://checkmarq.mu.edu/), to change an I, IC or IE to a permanent grade. The deadline for students to submit their course work for the removal of the I grade and the grade change deadline are listed in the Academic Calendar (p. 21). For this grade, students are obligated to submit all missing work to the instructor by their deadline, or request an extension to the Graduate School before the deadline and faculty are obligated to submit the grade change
by their deadline. The IE grade must be removed by the deadline, as outlined to students at the time the IE grade was approved. The IC grade removal is faculty initiated and must be removed once the class is complete; however, in all cases the IC grade must be changed within one year of the assigned IC grade. Retroactive withdrawals may not replace any incomplete grade. Once the deadline has passed to change the I, IE or IC to a permanent grade and the temporary grade has not been cleared, these grades become a permanent grade of F. (Note: prior to fall 2018, the permanent grade of PI was assigned, which carried no grade points.)

Correcting a Permanent Grade
Changing a permanent grade, because of miscalculation on the part of the instructor or a misunderstanding between the instructor and students, may be initiated by either students or instructors. Changing a permanent grade should be done within six months of the end of the term.

Graduate Credit
Graduate students who are officially accepted into the Graduate School can earn graduate credit for a course if the course is a 5000-level course or higher. As per the university policy regarding course numbering, the syllabus for a post-baccalaureate/graduate course (5000-level) that is cross-listed with a 4000-level course should include learning outcomes that clearly describe and distinguish the expectations of undergraduate and graduate students. These outcomes may be overlapping and/or represent different levels of engagement with the same content, but they must be communicated explicitly for undergraduate and graduate students.

Graduate students taking courses while in a non-degree status may request subsequent transfer of credits to their degree program, once formally admitted to a degree program, by submitting a Master’s Degree Transfer of Credit Request Form, available online at the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml).

Graduation
All students must apply for graduation in CheckMarq by the deadline specified in the Academic Calendar. Graduation deadlines are scheduled well in advance of the date of Commencement to allow time for student academic audits and for printing diplomas, graduation invitations and program booklets.

The awarding of a degree or certificate is contingent upon students’ successful completion of all program requirements prior to the date of graduation. Participation in commencement does not mean a student has graduated. A cumulative grade point average of 3.000 or above is also required to graduate. Any exceptions to the total credits and minimum grade point average requirements for any degree and/or certificate must be approved by the provost. When students fail to graduate at the time originally anticipated, they must reapply online for the next graduation before the appropriate deadline stated in the Academic Calendar (p. 21).

Students who have completed all of their degree or certificate requirements prior to a specific graduation date, but who have missed the graduation application deadline, may request a letter from the Graduate School certifying the completion of their program; however, in order for degrees to be conferred, students must still apply for graduation and the diploma reflects the next graduation date. Furthermore, the university reserves the right to graduate students without a graduation application on file, once all degree requirements are complete.

GRADUATION RECORD
The academic record of students is frozen once the degree is posted and may not be altered thereafter, unless required to do so by law and/or an egregious error is discovered after the posting. This includes, but is not limited to: all relevant grade point averages, grades, additional information relating to the degree(s), specialization(s) and academic censure.

Policy Governing Graduation Dates
Marquette University offers graduation on a weekly basis during the summer months and on a monthly basis during the academic year. However, each college/school may develop a policy that guides the implementation of this process for students in that college/school. This statement addresses the policy as implemented by the Graduate School.

The Graduate School implemented only specific additional graduation dates, and then only for students in specific academic disciplines. The additional graduation dates are used to accommodate students who are earning or earned a professional certificate issued by an agency other than Marquette University. This includes Wisconsin teaching licensure, the licensure in clinical psychology, and the specialty certificates in orthodontics, endodontics, and prosthodontics issued by the American Dental Association.

All graduate students other than those listed in the paragraph above are restricted to graduating in May, August or December of each year according to the Academic Calendar. In addition to these three regular graduations, the following additional graduation cycles are in effect for the groups of students specified:

- Last Friday of June – Utilized specifically for students in educational policy and leadership who are completing their student teaching, where the student teaching requirement is the final requirement necessary for graduation. This applies to master’s degree and certificate students. Additionally, graduate dental students earning their master’s degree in orthodontics, endodontics, or prosthodontics may be eligible for this graduation date on an exception basis, if they fail to meet the May graduation deadline for approval of the thesis.
In the case of both education and graduate dental students, applications for June graduation must be submitted by the deadline for May graduation.

Graduate dental students must submit an approved thesis and all other graduation requirements no later than June 1.

- **Last working day of September** – Available for clinical psychology and counseling psychology doctoral students who complete their pre-doctoral internship and/or their dissertation defense and dissertation submission after the deadlines established for the August graduation, but before the September graduation deadline. Students are responsible to apply for September graduation, and to complete all graduation requirements, no later than the last working day of August.

- **Last working day of October** – Available for clinical psychology and counseling psychology doctoral students who complete their pre-doctoral internship and/or their dissertation defense and dissertation submission after the deadlines established for the September graduation, but before the October graduation deadline. Students are responsible to apply for October graduation, and to complete all graduation requirements, no later than the last working day of September.

- **Last working day of January** – Available for clinical psychology doctoral students who complete their pre-doctoral internship and/or their dissertation defense and dissertation submission after the deadlines established for the December graduation, but before the January graduation deadline. In addition, this deadline is available for students in educational policy and leadership who are completing their student teaching, where the student teaching requirement is the final requirement necessary for graduation. This applies to master’s degree and certificate students.
  - Students in clinical psychology are responsible to apply for January graduation and to complete all graduation requirements no later than the last working day of December.
  - Students in educational policy and leadership are responsible to apply for January graduation no later than the last working day of December.

- **Last working day of February** – Available for clinical psychology doctoral students who complete their pre-doctoral internship and/or their dissertation defense and dissertation submission after the deadlines established for the January graduation, but before the February graduation deadline. Students are responsible to apply for February graduation, and to complete all graduation requirements, no later than the last working day of January.

Students who miss the deadlines for October or February graduation must wait until the following December or May to graduate, and in such cases are responsible to meet the established deadlines for those graduation cycles.

In exceptional cases, students enrolled in other graduate programs not explicitly covered in the above policy may also be permitted to graduate during the additional graduation cycles providing that these students apply to graduate, have the support of their department, and the Graduate School approves of their inclusion in the alternate cycle.

### Immunization and Tuberculosis Screening Requirements

Marquette University requires all newly admitted and readmitted undergraduate, graduate and professional students to provide dates of certain immunizations and complete a TB Screening questionnaire for tuberculosis. Proof of immunization, immunity or disease incidence, if applicable, for Measles, Mumps, Rubella (MMR), Varicella (chicken pox), Tetanus/Diphtheria/Pertussis and completion of a tuberculosis screening questionnaire is required and must be completed electronically. Directions on how to access the Marquette University Medical Clinic student web portal to complete these forms are found in CheckMarq under the Next Step tab. Directions can also be found on the Marquette University Medical Clinic website (https://www.marquette.edu/medical-clinic/required-health-forms.php). Failure to complete the required immunization and TB screening questionnaire within 30 days of the start of the student’s first term or the readmitted term at Marquette results in the placement of a registration hold on future registrations. The hold is removed once the immunization and screening requirements have been met. Health Sciences, Nursing and Dental students may be required by their departments or colleges to receive additional immunizations. Contact the department or college for specific requirements.

### Independent Study

Independent Study (6995 and 8995) courses provide students the opportunity to study and investigate areas of interest not available through normal course offerings. A 6995/8995 course may be taken on the recommendation of students’ advisers and with the approval of the department chairperson. An Independent Study approval form must be completed for each 6995/8995 course and is available on the Marquette Central academic forms website (http://www.marquette.edu/mucentral/registrar/policy_forms.shtml/). Normally, no more than six credits of 6995/8995 course work can be included in a master’s degree program, no more than nine credits in a doctoral program.

### Intellectual Property

Students must acquaint themselves with the University Intellectual Property Policy (http://www.marquette.edu/orsp/IntellectualProperty.shtml/). Marquette University students are subject to the policy when, working for pay or for academic credit, they participate in faculty research programs.

### Last Date of Attendance/Activity

Submission of the last date of attendance/activity is required for some grades (see Grading System above). This is based on a federal regulation mandating that the university inform the Department of Education when students stop participating in a class, or classes. There is a wide definition for the last date of attendance, i.e., it does not simply refer to attending class. This includes: the last time students attended class; the last time students took a test/quiz/exam; the last time students participated in a chat/discussion; the last time students submitted course work associated with the class; the
last time students used D2L for the class; the last time student participated in a lab; and/or the last time students participated in any class activity, either inside or outside the classroom. The last date of attendance is calculated by using the latest date a student participated in any of these activities.

**Military Call for Active Duty or Training**

The Graduate School adheres to the university policy on military call-up (http://bulletin.marquette.edu/undergrad/academicregulations/#spanmilitarycalltoactivedutyortrainingspan).

**Readmission**

See the Readmission section (p. 20) of this bulletin.

**Repeated Courses**

Graduate students who repeat a course may do so under certain conditions:

1. The repeated course is taken at Marquette.
2. The repeated course is identical to the original course in subject, catalog number, title, subtitle and credits.
3. The repeated course is graded with the same grading option as the original, i.e., students may not exercise a different grading option for a repeated course, unless it is now a required grading scheme.
4. A course in which a failing grade is earned may be repeated only once.
   - For graduate students, a failing grade is defined as any grade that is unacceptable to be counted toward degree completion.
5. Once a passing grade is earned in a course, the course may not be repeated.
6. There are certain courses that are exempt from this policy and may be repeated. Examples are thesis and dissertation courses, independent study courses, topics courses, internship and clinical courses, UWM and MCW exchange courses and most continuation courses.
7. When students repeat a transferred course at Marquette, only the Marquette course/grade are reflected in the total credits earned.

Should students need to take a course more than once, other than those referenced in item #6 above, a request to repeat must be filed using the Request Permission to Repeat a Course form found on the Marquette Central academic forms website (http://www.marquette.edu/mucentral/registrar/policy_forms.shtml/). This request is only approved if students have not earned a passing grade in the course per Graduate School standards.

Additionally, the following policy defines the calculation of cumulative GPA and credit totals:

1. All courses taken while students are in a graduate career and pursuing a specific degree/program combination are included in the calculation of the cumulative GPA.
2. When a course is repeated in an effort to earn a passing grade, both grades are included in the calculation of the cumulative GPA.
3. A grade of F or WF has a strong negative effect on the term and cumulative GPAs. Nothing in this policy alters the normal end-of-term academic review process, which may result in students placement on probation or consideration for disenrollment.

**Research Involving Humans, Animals, Radioisotopes or Recombinant DNA/Transgenic Organisms**

If human subjects, animals, radioisotopes, or recombinant DNA/transgenic organisms are involved in students’ research, these students must also satisfy other federally- and state-mandated requirements prior to initiating the research. These requirements are administered by the Marquette University Office of Research Compliance (ORC).

- For human subjects, students must submit a protocol for review and approval by the Marquette University Institutional Review Board prior to initiating the project. **Note:** IRB approval may take up to a month or more.
- For animal research, students must be properly trained and listed as personnel on a faculty member’s active Institutional Animal Care and Use Committee-approved animal protocol. Students are not allowed to serve as principal investigators on Marquette University animal protocols.
- For radioactive material use, only authorized users are allowed to obtain this material. Students must complete the training to become a radiation worker; radiation workers can work with radioactive materials only under the supervision of an authorized user.
- For recombinant DNA or transgenic organism research, students are only allowed to work with these materials while under the direct supervision of a faculty member who has received Institutional Biosafety Committee approval.

For more information about these four areas of compliance, including forms and submission procedures, refer to the ORC website (http://www.marquette.edu/orc/). Students may contact the Office of Research Compliance for more information by phone at (414) 288-7570 (human subjects and radiation safety) or (414) 288-6271 (animals and biosafety). Approval of the outline by the Graduate School does not constitute approval by ORC. **Note:** Non-compliance may affect acceptance of students’ projects as part of their degree.
Temporary Withdrawal from Graduate Program

Marquette University supports a temporary withdrawal from graduate program policy to assist graduate students who are temporarily unable to continue their programs. A temporary withdrawal is typically granted for one term, but in some circumstances, may extend for up to one academic year. Under unusual circumstances, a second temporary withdrawal may be requested as an extension of the original request or as a separate request, unrelated to previous requests. Reasons for requiring a temporary withdrawal may include: bereavement, illness, injury, care giving, military service, maternity and paternity.

Preparing the Application for Temporary Withdrawal from Graduate Program

Students requesting a temporary withdrawal must submit a Request for Temporary Withdrawal from Graduate Program form, found on the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/). The form is completed by the student, and signed by both students and their advisers or supervising faculty member. The application is submitted to the chairperson/director for review and signature, who will forward it to the Graduate School for consideration on a case-by-case basis. Students may be required to provide documentation to support their request. The temporary withdrawal must be requested in advance of the anticipated temporary withdrawal, prior to the start of a term, and is not approved retroactively (i.e., for previous terms), unless the Temporary Withdrawal from Graduate Program approval process was initiated at the beginning of a term and the decision of the university was delayed. The termination of the withdrawal should coincide with the end of a term or session.

It is the responsibility of all students to ensure that the proposed temporary withdrawal is compatible with the regulations of any granting agency from which funding is normally received during the temporary withdrawal period, and that such agencies are informed of the proposed temporary withdrawal. Students on student loan programs are responsible for determining the consequences that such a temporary withdrawal may have on their repayment status prior to applying for a temporary withdrawal from their graduate program. International students are advised to consult with the Office of International Education regarding their immigration status prior to applying for a temporary withdrawal from their graduate program.

Students granted a temporary withdrawal from their graduate program have their time-to-completion of degree extended by the amount of time granted by their temporary withdrawal. The continuous enrollment policy is also held in abeyance during this time. Students granted a temporary withdrawal are not held to the readmission process unless they do not enroll in the term indicated on the Request for Temporary Withdrawal from Graduate Program form.

Students granted a temporary withdrawal do not have the right to use university facilities during the time of their temporary withdrawal. This includes the library, the recreation center and any other resources normally granted to enrolled students.

Students should make every effort to resolve any grades of incomplete prior to beginning a temporary withdrawal. However, students who begin a temporary withdrawal with one or more unresolved grades of incomplete must negotiate with the course instructor(s) a timeline for completion of the academic work leading to the incomplete, and must submit the timeline to the Graduate School.

The salary and stipend of graduate student assistants who are granted a temporary withdrawal from their graduate program is suspended during the period of their withdrawal.

In situations where it is necessary for students to leave during a term, they should seek a late withdrawal for that term.

Time Limitations

Students are expected to complete all requirements for their degrees in the time allowed: six years for master’s degrees and certificates, and eight years for doctoral (Ph.D. and D.N.P.) degrees. The time period begins with the date of admission to degree status, or with the date of admission to non-degree status in the same or closely-related program. The start of the time period is not affected by transfer credit taken prior to admission to Marquette.

Students who are unable to complete their degrees within the allowable time may petition the Graduate School for an extension; Request for Extension of Time forms are available on the Graduate School forms website. (http://www.marquette.edu/grad/forms_index.shtml/) To ensure timely consideration, the Request for Extension of Time form should be filed early in the term in which the time limit expires. If the extension is approved, students are notified of the expectations for progress toward completion of the degree. Failure to meet those expectations may result in academic censure, including dismissal. If the extension is denied, students are terminated from their graduate program at the end of the term during which the time limit expires.

Extensions are typically granted for one academic term, but in some circumstances, may extend for up to one year. Students are generally be limited to two requests for extension of time and a cumulative total of two years of extension. Under unusual circumstances, a subsequent extension may be considered, but only to the degree it does not cause a substantial change to the student’s thesis, project or dissertation committee, or alter or negatively affect fundamental aspects of the program in which they are enrolled.

Failure to complete the program or to obtain an approved extension of time may result in the student being administratively withdrawn from the program. In such cases, students must follow the guidelines for readmission in order to be considered for readmission to their program of study.

Transcripts-Official

An official transcript is a complete and unabridged copy of all academic work attempted at Marquette and includes only those courses attempted at Marquette. Partial official transcripts are never produced. Transfer and test credits accepted toward a Marquette degree are recorded, but the grades
undergraduate students admitted to an accelerated degree program (ADP) are subject to the transfer limits and rules as detailed in the corresponding course work (exclusive of thesis) may be accepted for transfer depending on the total number of credits needed for the degree. Marquette University Upon recommendation of the department and concurrence by the dean of the Graduate School, 9-15 credit hours of the program's requirement for Master's Programs due to the time necessary to receive an official transcript and process the transfer credit. or courses are taken at another university during students' final term at Marquette, their graduation could be delayed until the following graduation cycle. Courses should not be taken at another university during students' final term, if those credits are necessary to meet graduation requirements. If a course transferred credit. Students are strongly urged to consult their advisers before submitting a transfer request and before taking any course for which they intend to request transfer credit. Transfers from schools using a trimester system varies by school and must be evaluated individually. The following notations appear on the permanent academic record of the student, including the official transcripts of the university:

1. **Required to Withdraw for Academic Misconduct**: dismissed due to academic dishonesty. 'Required to Withdraw for Academic Misconduct' appears on both unofficial and official transcripts. If students are allowed to return after this dismissal, 'Reinstated to the University' permanently appears on both transcripts.

2. **Required to Withdraw for Academic Reasons**: dismissed due to academic performance. 'Required to Withdraw for Academic Reasons' appears on both unofficial and official transcripts. If students are allowed to return after this dismissal, 'Reinstated to the University on Probation' permanently appears on both transcripts.

3. **Required to Withdraw for Non-Academic Reasons-Expulsion**: dismissed due to student conduct violation. 'Required to Withdraw for Non-Academic Reasons: Expulsion' appears on both unofficial and official transcripts. Expulsion is the most serious university disciplinary action and involves the permanent exclusion of students from the university.

4. **Required to Withdraw for Non-Academic Reasons-Suspension**: dismissed due to student conduct violation. 'Required to Withdraw for Non-Academic Reasons: Suspension' appears on both unofficial and official transcripts. If students are allowed to return after this dismissal, 'Reinstated to the University' permanently appears on both transcripts.

5. **Required to Withdraw for Professional Integrity Reasons**: dismissed due to lack of integrity in a professional setting, such as a clinical or field placement. 'Required to Withdraw for Professional Integrity' appears on both unofficial and official transcripts. If students are allowed to return after this dismissal, 'Reinstated to the University' permanently appears on both transcripts.

6. **Required to Withdraw for Professional Performance Reasons**: dismissed due to poor performance in a professional setting, such as a clinical or field placement. 'Required to Withdraw for Professional Performance' appears on both unofficial and official transcripts. If students are allowed to return after this dismissal, 'Reinstated to the University' permanently appears on both transcripts.

7. **Required to Withdraw for Unsatisfactory Degree Progress**: dismissed due to lack of degree progress. 'Required to Withdraw for Unsatisfactory Degree Progress' appears both unofficial and official transcripts. If students are allowed to return after this dismissal, 'Reinstated to the University' permanently appears on both transcripts.

**Transfer of Credit**

In order to protect the academic integrity and rigor of a Marquette graduate degree, limits are placed on the number of credit hours that may be transferred from other institutions, from Marquette in a different program, or from Marquette in the same program but in a different status (temporary or non-degree). Only credits directly applicable to students' Marquette degree program will be considered for transfer, and there is no guarantee that a transfer request will be approved. Credits considered for transfer must be graduate-level credits or upper-level undergraduate credits that are acceptable for graduate credit at the institution offering the course.

Credits that are accepted for a Marquette degree, if transferred from another university, are not included when calculating the GPA. However, credits taken at Marquette in another program or in the same program but in a different status (temporary or non-degree), if accepted for transfer into a degree program, are included in the GPA. Only courses in which a grade of B or above is earned may be transferred for credit into a master’s program or used on a Doctoral Program Planning Form.

Credits approved for transfer from a school using a quarter-system transfer as two-thirds credit each when converted to Marquette's semester system. Transfers from schools using a trimester system varies by school and must be evaluated individually.

Students are strongly urged to consult their advisers before submitting a transfer request and before taking any course for which they intend to request transfer credit.

Courses should not be taken at another university during students' final term, if those credits are necessary to meet graduation requirements. If a course or courses are taken at another university during students' final term at Marquette, their graduation could be delayed until the following graduation cycle due to the time necessary to receive an official transcript and process the transfer credit.

**Master's Programs**

Upon recommendation of the department and concurrence by the dean of the Graduate School, 9-15 credit hours of the program’s requirement for course work (exclusive of thesis) may be accepted for transfer depending on the total number of credits needed for the degree. Marquette University undergraduate students admitted to an accelerated degree program (ADP) are subject to the transfer limits and rules as detailed in the corresponding
Undergraduate degree-seeking seniors, or those admitted to an appropriate accelerated degree program may, with the permission of their home college and the department offering the course, register for a 5000 or higher-level graduate course if the student has a B (3.000) or higher overall grade point average. To register for a graduate course, undergraduate degree-seeking students must complete the Permission to Enroll in a Graduate Course form, available on the Graduate School website (http://www.marquette.edu/grad/forms_index.shtml/). Once all signatures of approval are obtained and students receive a permission number from the department offering the course, students must then register for the course online through CheckMarq (https://checkmarq.mu.edu/). These courses may not be graded using the CR/NC, S/U, SNC/UNC or AU (audit) grading option, unless this is the only grading option available for the course.

Withdrawals

See Enrollment Changes, above.
Working with Minors

Effective July 1, 2009, University Policy and Procedure 4-26 was established to provide a safe environment to those under the age of 18 years old participating in programs and activities at Marquette University. Unless an exception applies, programs that involve adults working with minors in university-sponsored programs and other programs held on campus must register with the Department of Risk Management. In addition, adults, before directly participating with minors in such programs and activities, must complete a criminal history background check; observe specific behavioral requirements; report all allegations of inappropriate conduct; and participate in mandatory training on protecting minors and on the behavioral and reporting requirements of the policy. The Department of Risk Management's website (http://www.marquette.edu/riskunit/riskmanagement/working_with_minors.shtml/) provides additional information on this topic and all required forms needed for this policy.
Special Academic Programs

Accelerated Degree Program

The Accelerated Degree Program (ADP) policy is designed to provide undergraduates a more efficient means to obtain a graduate degree or certificate. Minimum academic criteria are established by each participating unit for students who have a high academic potential (typically 3.000 or above) and want to start taking graduate-level courses during their undergraduate careers, some of which count toward both their undergraduate and graduate degrees.

Undergraduates participating in this program are granted early admission to the Graduate School and are allowed to take specified graduate-level courses during their junior year and/or senior year.

Admission Process

Academic programs that offer an accelerated program may approve a maximum of 40% of graduate credit hours for graduate programs. These hours can be applied by individual students toward both the undergraduate and graduate degree. Requests for any exceptions to these limits would go to the assistant dean of the Graduate School.

Undergraduate students in an accelerated program apply for formal admission to the Graduate School using regular procedures.

An accelerated degree student is officially considered an undergraduate student until the baccalaureate degree is awarded. While an undergraduate, the student may enroll for graduate credit but pays the appropriate undergraduate tuition for graduate courses.

Academic units define satisfactory academic progress for undergraduates in the accelerated degree program. Contingent on students maintaining satisfactory academic progress, acceptance in the accelerated degree program is a promise of formal admission to the Graduate School and the academic unit after completion of the bachelor’s degree. Students who fail to make such progress may be dropped from the program.

Undergraduate students who complete the undergraduate degree may claim their status as graduate students in the next term or session after receiving the bachelor's degree. At that time, the Graduate School will matriculate the student as a graduate student.

Academic Advising and Records

Academic units that want to participate in the ADP develop a clear admissions and advising process for their accelerated degree program.

Students admitted to an accelerated program are required to complete and submit an approved program planning form to the Graduate School while the student is still an undergraduate.

Admission Procedure

Each academic unit with an accelerated program develops admission criteria based on the following guidelines:

1. Minimal criteria for admission and continuation in the program is established by each participating program.
2. Each academic unit establishes the point in an undergraduate career when a student may apply for admission to the accelerated degree program, but in no case may it be earlier than the completion of the sophomore year.
3. The student must apply for admission to the accelerated degree program through the Graduate School. This admission, if approved, includes admission to the graduate degree granting academic unit.
4. International students who are admitted into the accelerated degree program work with the Graduate School and the Office of International Education in order to apply for the appropriate visa.

Dual Counting of Undergraduate and Graduate Credits

With the approval of the applicable academic unit and the Graduate School, graduate credits taken during a student’s undergraduate career may be applied toward completion of up to 40% of a graduate degree. Requests for any exceptions to this limit would go to the assistant dean of the Graduate School.

None of the graduate courses taken in this program may be applied to the undergraduate Marquette Core Curriculum (MCC).

Graduate courses taken outside of an accelerated degree program as an undergraduate student may be considered for transfer into a graduate program if they have not also been counted toward the undergraduate degree.
applicable registration form, found online on the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/), then get their adviser’s approval, and finally submit the completed form to the Graduate School. This registers the student for the course GRAD 6933 Exchange/University of Wisconsin-Milwaukee or GRAD 6945 Exchange/Medical College of Wisconsin, both of which are variable title and variable credit courses that reflect the title and number of credits of the course at the host institution. The student must also register for the course at the host institution. Tuition is only paid at the home institution for the GRAD 6933 or GRAD 6945 course. Only degree-seeking graduate students in good standing are eligible to participate. This program is not intended for students in joint programs such as bioinformatics, biomedical engineering, and healthcare technologies management, where the courses between Marquette and MCW are cross-listed. Interested students should contact the Graduate School office for additional information and enrollment forms.

Midwest Catholic Graduate Schools Consortium

The consortium of Midwest Catholic Graduate Schools (MCGS) includes Loyola University, Chicago, Ill.; Marquette University, Milwaukee, Wis.; University of Notre Dame, South Bend, Ind.; and St. Louis University, St. Louis, Mo. MCGS has established the protocol whereby a degree-seeking student at one university may take course work at any of the other three universities to apply toward degree requirements at the home institution.

With prior approvals, the student enrolls at the home institution and makes financial arrangements there, but attends classes, on a short-term basis, as a visiting student at the host university. Final grades are forwarded from the host to the home university for listing on the student’s permanent record. The following restrictions apply: 1) Participation is restricted to those fields of study which are under the academic jurisdiction of the graduate deans at both the home and the host institutions; 2) Non-degree or temporary students may not participate; 3) The degree-seeking student must have completed at least the equivalent of one full term at the home university before visiting one of the other institutions; 4) A student may gain approval for more than one visitation at more than one host institution, but no more than six credit hours of courses from host institutions can become part of a degree program at the home institution.

To participate, a student must complete, for each course to be taken at a host institution, an Inter-University Visitation Enrollment Form and the applicable registration form, found online on the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/), both of which require signatures of approval. Because of the paperwork involved and the number of approvals that must be obtained, the student must begin the inter-university visitation application process no later than June 1 for a fall term visitation, October 1 for the spring term, or March 1 for the summer term. Interested students should contact the Graduate School office for additional information and enrollment forms.

Preparing Future Faculty and Professionals Program

Preparing Future Faculty and Professionals (PFFP), sponsored by the Graduate School, provides professional development opportunities for graduate students. Graduate students are welcome to participate in all PFFP activities as part of their preparation for pursuits in academia, as well as other careers. The Graduate School works in collaboration with the Center for Teaching and Learning, the Office of Research and Sponsored Programs, the Writing Center, the Career Services Center, the 707 Hub, the Kohler Center, the Office of Community Engagement, GROW and Campus Ministry to offer wide-ranging opportunities for professional development.

PFFP participants prepare individual development and mentor plans and engage in activities organized around seven concentrations: teaching, scholarship, leadership, career development, professional development, intra- and entrepreneurship, and service and mission.

The programs collaborating with PFFP provide students opportunities to complete PFFP requirements, including workshops.
Successful completion of the requirements for the PFFP Program is recognized with a notation on the graduate student's official university transcript. For more information call (414) 288-5957, email mupff@marquette.edu, or visit the website (http://www.marquette.edu/pff/).
Student Financial Aid

Both institutional (merit-based) and Federal Title IV funds are available to graduate students at Marquette University. The Graduate School offers and administers institutional aid such as university-funded teaching assistantships, research assistantships, tuition scholarships and a variety of fellowships. The Office of Student Financial Aid, located in Marquette Central, offers and administers Federal Title IV funds and on- and off-campus employment opportunities.

Students may opt to pay for their studies in a variety of ways. In addition to merit- and need-based aid, they may use their personal funds, sign up for the monthly payment plan offered by Marquette Central, receive assistantships funded by faculty members’ grants, or apply for outside scholarships and fellowships. Numerous funding options are listed and regularly updated in the financial aid section (https://www.marquette.edu/grad/financial-aid.php) of the Graduate School website (http://www.marquette.edu/grad/).

Resolution of the Council of Graduate Schools in the United States

Marquette University is a signatory to the CGS resolution (http://cgsnet.org/april-15-resolution/). The resolution states that acceptance of an offer of financial support (such as a graduate scholarship, fellowship, traineeship or assistantship) for the next academic year by a prospective or enrolled graduate student completes an agreement that both student and Graduate School expect to honor. When students accept an offer before April 15 and subsequently desire to withdraw that acceptance, they may submit a written resignation of the appointment at any time through April 15. However, an acceptance given or left in force after April 15 commits students to not accept another offer without first obtaining a written release from the institution to which a commitment has been made. Similarly, an offer by an institution after April 15 is conditional on presentation by the students of written release from any previously accepted offer. It is further agreed that institutions subscribing to the CGS resolution enclose a copy of the resolution with every scholarship, fellowship, traineeship and assistantship offer it sends prior to April 15.

Merit-Based Competitive Financial Aid

Students applying for merit-based aid must:

• Be admitted to degree or certificate programs (exceptions are made for the Catholic Schools Personnel Scholarships and the Milwaukee Area Teachers Scholarships).
• Not be admitted on probation.
• Maintain 3.000 grade point averages (term and cumulative). Failure to do so may result in the withdrawal or discontinuation of their aid.

Awards are made on the basis of academic record and scholarly promise. Factors used in determining this aid include the applicants’ transcripts, letters of recommendation, test scores and academic backgrounds. Financial need is not a factor.

Every recipient of financial aid offered by the Graduate School is notified of the rules and guidelines for Graduate School financial aid. The rules and guidelines for assistantships and scholarships are available online (http://www.marquette.edu/grad/finaid_forms.shtml/). These documents cover topics such as responding to the offer, reapplying for aid and handling involuntary termination procedures. Acceptance of the offer of financial aid implies knowledge of the rules and guidelines covering such aid, and aid recipients are held accountable for complying with those rules and guidelines.

Assistantships

Assistants work no more than twenty hours per week in their departments. Assistants receive stipends and full tuition scholarships.

Domestic students: Unless specifically prohibited by the student’s assistantship appointment, domestic students may have outside employment. However, outside employment above 10 hours per week is not allowed without written notification of the Graduate School and the student’s academic department. If a student intends to work as an assistant plus work more than 10 hours per week of outside employment, they must complete and submit the Declaration of Outside Employment Form, found online here: https://www.marquette.edu/grad/documents/form-declaration-of-outside-employment-2020.pdf.

International students: Due to Federal Regulations, international students on a student visa cannot work on-campus more than the time dedicated to their full-time assistantship appointment.

Types of Assistantships

• Graduate Teaching Assistantships
  Graduate teaching assistants may serve as instructors of record, or assist faculty in teaching courses including functioning as discussion/laboratory section leaders or in providing other appropriate professional assistance including grading examinations, problem sets, and/or lab assignments, setting up displays for lectures and laboratory sections, and preparing or maintaining equipment used in laboratory sections.

• Graduate Research Assistantships
  Graduate research assistants are graduate students conducting academically significant research under the direction of a faculty member. Graduate research assistantships are awarded by departments with faculty members engaged in research projects.
• Graduate Assistantships
Graduate assistants are appointed for the primary purpose of assisting in classroom or laboratory instruction or in the conduct of research. Graduate assistants are included in this category when differentiating between instruction and research duties is difficult.

• Graduate Service Assistantships
Graduate service assistants meet the definition of a graduate assistant except students are not appointed for the primary purpose of assisting in classroom or laboratory instruction or in the conduct of research. Graduate service assistant positions are awarded for the primary purpose of gaining experience, practice or guidance that is significantly connected to the students' fields of study and career preparation. Graduate service assistants typically serve the university outside of an academic department and may provide service to off-campus organizations affiliated with the university. Trinity Fellows are included in this classification.

For more information about assistantships, go online (http://www.marquette.edu/grad/finaid_forms.shtml/) to view the Rules and Guidelines for Graduate School Assistantships.

1 Programs that do not offer assistantships from the Graduate School include physical therapy, physician assistant studies, sports and exercise analytics, occupational therapy, the biomedical sciences post-baccalaureate program, transfusion medicine and master's programs in Counselor Education and Counseling Psychology. Dental students must contact the associate dean for research and graduate studies at the School of Dentistry for award consideration.

Scholarships 1
Many programs offer scholarships to pay for tuition charges. Scholarships do not pay for prerequisites, audited courses or non-related degree program courses and fees. They do not pay for more than six thesis or twelve dissertation credits.

1 Programs that do not offer scholarships from the Graduate School include physical therapy, physician assistant studies, sports and exercise analytics, occupational therapy, transfusion medicine and master's programs in Counselor Education and Counseling Psychology. Dental students must contact the associate dean for research and graduate studies at the School of Dentistry for award consideration.

Fellowships
A number of foundations, corporations, individual philanthropists, as well as the university, provide fellowships to Marquette graduate students. Fellowships do not have departmental work obligations, but outside employment is not allowed without the written permission of students' advisers and the Graduate School. Specific requirements of fellowships are included in award offer letters. Most fellowships require departmental nominations. Refer to the table, found within this section, for a listing of fellowships and application and nomination requirements.

Application Procedures
New applicants for admission should complete the application (https://graduate.admissions.marquette.edu/apply/), and submit all admission materials by the application deadline (see below). Applicants for the Catholic Schools Personnel Scholarship may obtain a special paper application from the Graduate School, or they may apply online (http://www.marquette.edu/grad/financial-aid-forms.php).

Admitted or continuing students should complete and submit the Financial Aid Application for Admitted Students by the application deadline (see below). The form may also be completed and submitted online (http://www.marquette.edu/grad/financial-aid-forms.php).

Application Deadlines
For priority consideration, applications are due by the end of the day on the following dates.

<table>
<thead>
<tr>
<th>Session</th>
<th>Dates</th>
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<tbody>
<tr>
<td>Fall Term</td>
<td>Feb. 15</td>
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<tr>
<td>Spring Term</td>
<td>Nov. 15</td>
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<tr>
<td>Summer Term</td>
<td>April 15</td>
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</tbody>
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Some programs may have deadlines for fall admission that are earlier than the financial aid application deadlines. New applicants for financial aid in those programs must adhere to the earlier department deadlines that are listed in the specific program sections of this bulletin.

Employees and Individuals Eligible for Tuition Remission
Marquette University employees and their family members, and certain non-employees, who receive tuition benefits (such as faculty remission, employee remission, spousal remission, dependent/child remission or non-employee remission) are not eligible to receive Graduate School-funded tuition scholarships in addition to their remission benefits. However, they can apply for and receive graduate assistantships if they decline their remission benefits, and meet all assistantship eligibility requirements as stated in the Rules and Guidelines for Graduate Assistantships.
Office of Student Financial Aid

Financial aid is monetary assistance to help students meet the expenses of going to college. Financial aid is not intended to cover all of a student's expenses. The primary financial responsibility belongs to the student and their family. The Office of Student Financial Aid at Marquette University attempts to help bridge the gap between the costs of attending the university and the ability of the student and their family to meet those costs.

A student's financial aid award may include one or a combination of scholarships, assistantships or student loans to help meet the costs of a graduate or professional program. Scholarships and assistantships are awarded by each school or program (dental, law, health sciences or graduate). Questions concerning scholarships and assistantships should be directed to the admissions or dean's office of the school or program in which you plan to enroll.

The most current and accurate information can be obtained by visiting the Marquette Central website (http://www.marquette.edu/mucentral/financialaid/index.shtml). Marquette Central professional staff is available for assistance Monday through Friday, 8:00 a.m. to 4:30 p.m. at (414) 288-4000. Although care is taken to ensure the accuracy and timeliness of information contained in this bulletin, the information is subject to change and/or deletion without notice due to unintended error and/or ongoing changes in federal and state legislation.

Eligibility Requirements

To receive financial aid from federal and state programs students must meet the following requirements:

- Be a U.S. citizen or an eligible non-citizen. Students with F1, F2, J1, or J2 visas are not eligible.
- Be registered with Selective Service (https://www.sss.gov/), if required.
- Be working toward a degree or certificate.
- Be enrolled at least half-time. Audit, repeat and other non-credit classes do not apply.
- Half-time: 4 credits per term for Graduate; 6 credits per term for Dental, Law and Health Sciences.
- Be making Satisfactory Academic Progress (http://www.marquette.edu/mucentral/financialaid/resources_elig_standards.shtml).
- Complete the Free Application for Federal Student Aid (FAFSA) at studentaid.gov/fafsa (https://studentaid.gov/h/apply-for-aid/fafsa/).
- Demonstrate financial need, if applying for need-based aid.
- Not be in default on any loan or owe a refund on any grant made under Title IV of the Higher Education Act of 1965, as amended, at any institution.

Application Procedures

The first step prospective students must take is to complete the Marquette University online application for admission. Students need to be formally admitted into the university before they are considered for financial aid assistance. Students may apply for financial aid if they are currently enrolled or are applying for admission to Marquette University.

To apply for financial aid students must complete the Free Application for Federal Student Aid (FAFSA). The FAFSA website is studentaid.gov/fafsa (https://studentaid.gov/h/apply-for-aid/fafsa/) and Marquette's Title IV School code is 003863. It is important for students to file their FAFSA between October 1 and January 15 in order to receive consideration of all types of financial aid. FAFSAs received February 1 or later for continuing students result in a reduced financial aid award. The student's Expected Family Contribution (EFC) is calculated from information provided on the FAFSA and is listed on the Student Aid Report (SAR). The EFC is an indicator of a family's financial strength and is used along with the Cost of Attendance (COA) to determine a student's eligibility for financial aid.

During the application process, students may be asked to verify the information reported on the FAFSA. Any aid offer is contingent upon completion of the verification process.

Satisfactory Academic Progress Policy

Marquette University is required by federal regulation to apply qualitative and quantitative standards in measuring academic progress for financial aid purposes. The complete Satisfactory Academic Progress Policy can be found on the Marquette Central website (http://www.marquette.edu/mucentral/financialaid/resources_elig_standards.shtml).

Office of Student Financial Aid - Available Programs

Scholarship Assistance - Private Scholarship Opportunities

Information on Private Scholarship Opportunities can be found on the Marquette Central website (http://www.marquette.edu/mucentral/financialaid/resources_pvt_scholar.shtml).

Loan Assistance

A loan is a type of financial aid that has to be repaid upon graduation or when no longer enrolled in school on a full- or half-time basis (depending upon the terms of the individual loan program). A master promissory note (legal agreement to repay) must be signed before a loan is disbursed. The promissory note contains detailed information about terms, responsibilities and repayment of the loan. There are no penalties for prepaying principal or
interest in any student loan program. Federal regulations require all first-time Federal Direct Loan borrowers to participate in loan entrance counseling before disbursement of the loan.

**Federal Loan Programs**

The principal loan programs administered by Marquette for graduate students are the Federal Direct Unsubsidized Loan and the Federal Direct Grad PLUS Loan.

Additional information about loans can be found on the Marquette Central website (http://www.marquette.edu/mucentral/financialaid/grad_loans_types.shtml/).

**Truth in Lending Act Disclosures**

Students borrowing any non-federal loans (e.g., institutional or private loans) must sign and acknowledge disclosure forms acknowledging the specific terms of each loan and stating that the student is aware of lower cost federal loan alternatives. The disclosure forms are sent out by the lending institution when appropriate. Each disclosure form clearly states what steps the students must take next and in what time frame those steps must be made.

**Private Alternative Loans**

Alternative loans are non-federal educational loans available from a variety of national lending institutions. Minimums and maximums vary for these loan programs, but all require a satisfactory credit history. Alternative Loan Lender Information (http://www.marquette.edu/mucentral/financialaid/ugrad_loans_alt.shtml/) provides links to a comprehensive, historical listing of all lenders that Marquette University students have used in the past five years. This is in no way exclusive or exhaustive of all existing lenders, and students are not required to select from these lists. The Office of Student Financial Aid honors requests to certify other alternative educational loans that do not appear on these listings.

**Student Employment Assistance**

The primary function of Student Employment Services, located within the Office of Student Financial Aid, is to assist students in securing employment on campus or off campus with businesses in the area. Many students help finance their education through part-time employment.

Marquette lists part-time on and off campus positions on the web-based job posting site, JobConnection (https://jobconnection.mu.edu/interfase.htm).

Students wishing to work must comply with the Immigration Reform and Control Act of 1986. This means that new student employees need to complete an I-9 form with Marquette Central on their first day of employment. Students must provide original documents (i.e., Social Security card and driver’s license or U.S. passport); copies or faxes of documents are not acceptable. Be sure to check the last page of the I-9 form for a list of acceptable documents to complete the I-9 process. Students may view the I-9 requirements on the Marquette Central website (http://www.marquette.edu/mucentral/financialaid/ses_i9.shtml/). Contact Student Employment Services at studentemployment@marquette.edu with questions.

**For More Information**

For more information please visit our Marquette Central website (http://www.marquette.edu/mucentral/financialaid/index.shtml/). Contact us with questions at marquettecentral@marquette.edu, (414) 288-4000, or visit Zilber Hall, Suite 121. When contacting Marquette Central, provide the students’ Marquette University ID (MUID) number and four-digit Marquette Central Access Number (MCAN) (http://www.marquette.edu/mucentral/mcan.shtml/). Marquette Central’s office hours are 8:00 a.m. to 4:30 p.m. Monday through Friday, CST.
Student Resources and Facilities

Disability Services

Marquette University strives to ensure equal access to qualified students with disabilities across all aspects of university life. The Office of Disability Services has been designated to coordinate this process in accordance with the university’s compliance responsibilities under the law. Accommodation determinations for all students with identified and documented disabilities are made on a case-by-case basis. Any student is welcome to contact this office for more information; accommodations may be approved through an interactive process for individuals with a diagnosed medical, physical or mental health condition that is affecting at least one major life activity.

More detailed information about accessibility for all students at Marquette can be found at the Disability Services website (http://www.marquette.edu/disability-services/). The Office of Disability Services is located in the 707 building, Room 524; P.O. Box 1881, Milwaukee, WI 53201-1881; Phone (414) 288-1645; Fax (414) 288-5799.

Email

Marquette University utilizes email as one of the official means of communication with students to keep them informed of important information such as financial aid and billing data; college deadlines, events and updates; and important campus news. Students are issued an official eMarq email account for use while they are enrolled.

Email is an appropriate and preferred method for official communication by Marquette with students unless otherwise prohibited by law. The university has the right to send official communication to students by email with the assumption that students receive, read and, if necessary, act in a timely manner based upon these emails. For more information, see the University Email Policy (http://www.marquette.edu/its/about/official.shtml/).

Financial Aid Information

The publication Award Information Guide provides an overview of the available financial aid, how to accept financial aid, debt management, students’ rights and responsibilities and federal loan programs. Information is available online at the Marquette Central website (http://www.marquette.edu/mucentral/financialaid/index.shtml/). Information about different types of financial aid available to graduate students may be found in this bulletin under Student Financial Aid.

Graduate Student Organization

The Graduate Student Organization (GSO) is dedicated to providing opportunities for community service and fostering social connections between graduate students. In addition, the GSO serves as a channel for graduate students to voice concerns, resolve difficulties and provide feedback on issues that directly affect graduate student life at Marquette University.

The GSO accomplishes this goal by:

• Actively representing graduate students by serving on several committees within the Graduate School and providing support for programs through members of the GSO council
• Advocating for changes that are important to graduate students
• Fostering inter-departmental cooperation and exchange
• Encouraging unity among the graduate students by providing social and service events for graduate students
• Improving the academic environment for graduate students by providing scholarly resources on campus
• Providing social events for graduate students
• Working with Campus Ministry to provide spiritual support for interested graduate students

All part-time and full-time graduate or professional students enrolled at Marquette University are automatic members of the GSO and membership is free.

For a listing of events and meetings, past meeting minutes, the GSO Constitution and the Graduate Student Rights and Responsibilities, visit the GSO website (http://www.marquette.edu/grad/GSO/).

Marquette Central

This office is the primary source for student enrollment and financial services information and assistance. Once students are admitted to the university, this office is available to help students through Marquette processes and serves as a resource for questions about registration, student financial aid and student accounts. For more information, visit the Marquette Central website (http://www.marquette.edu/mucentral/).
Marquette University Police Department

With the Marquette community located in downtown Milwaukee, students need to be aware of the realities of city living. Recognizing this, the university strives to educate students about personal safety and crime prevention through a wide variety of safety programs and services.

Marquette operates its own commissioned police department (http://www.marquette.edu/mupd/about.php), which works closely with the Milwaukee Police Department to ensure the security and safety of the university community. Located on the first floor of the 16th Street Parking Structure, 749 N. 16th St. (between Wisconsin Avenue and Wells Street), the department houses its administration, officer operations, the Command Information Center, preventive services and Student Safety Programs. MUPD operates 24 hours a day, every day. Services can be obtained by calling (414) 288-6800. In cases of emergency, students and employees should contact MUPD’s emergency line by dialing (414) 288-1911 from any campus extension or off-campus phone.

MUPD employs police, public safety and university service officers. The police officers’ primary role is to prevent crime and the breach of public order. Primary responsibilities include protecting students, faculty, staff, campus visitors, property and facilities from accidents, bodily harm, fire, theft, vandalism and illegal entry; enforcing laws and traffic and parking regulations; apprehending violators; providing general information and assistance to the public; conducting criminal investigations; and participating in community-oriented policing efforts. Public safety officers are responsible for preventing and suppressing crime, protecting life and property, and preserving peace throughout the Marquette community. University service officers are responsible for protecting the Marquette community and securing Marquette's property. They conduct walking patrols of campus buildings and grounds, provide authorized after-hours access to buildings, and assist public safety officers, as well as campus community members, who have locked keys in cars, need jump-starts or require other assistance.

To provide members of the Marquette and surrounding community with a direct means of contacting MUPD, the university maintains Blue Light and Service Phones. Blue Light Phones, most frequently recognized by blue lights on the top of the phones, and Service Phones, most frequently recognized by red labels, are placed in university buildings, apartments, parking areas and near-off-campus areas. Video cameras are located throughout campus and in the near-campus neighborhood. They are linked to the Command Information Center in MUPD and are used to help monitor suspicious behavior and document activity in a given area.

MUPD also offers a free safety app, EagleEye, as an added layer of security. Available for download from the Apple App Store and Google Play for Android, the EagleEye app features a mobile Blue Light feature, which allows users to press a button in the app that connects them directly to MUPD; a Friend Walk feature, which allows students to track their friends’ locations from point A to point B; and a variety of other safety and security features.

A wide variety of crime prevention and safety awareness programs (http://www.marquette.edu/mupd/safety-tips.php) are made available to groups that are interested in promoting safety. Popular topics include self-defense, personal safety, sexual assault prevention and alcohol awareness. Numerous brochures, a newsletter and crime statistics are readily available to provide information.

Any member of the Marquette community who becomes involved in a crisis situation can receive the benefits of the Victim/Witness Services program. The program provides resources for those in need of counseling or support services in addition to providing escorts to and from all necessary court-related appearances.


Student Information System (CheckMarq)

Marquette students obtain up-to-the moment information, monitor their academic record, view courses, register, run an academic progress report and update their address/phone numbers online by using the CheckMarq system (https://checkmarq.mu.edu/). Students can access CheckMarq from any computer or mobile device with Internet access. CheckMarq requires both a username and password. Information Technology Services assigns usernames and temporary passwords to all new students at the time of their admissions. While the username is effective for the duration of their studies at Marquette, the temporary password must be changed the first time students log onto their account and is changed periodically thereafter.

Transcript of Academic Record

A Marquette University transcript (http://bulletin.marquette.edu/undergrad/academicregulations/#transcripts-official) is the complete and unabridged copy of all academic work attempted while matriculated at Marquette, with the exception of transfer credit taken elsewhere. Partial transcripts are never produced. Course and grade information contained on the transcript are released pursuant to the Family Educational Rights and Privacy Act of 1974 (as amended).

Students may obtain a transcript of their Marquette record by completing a Transcript Request form available on the Marquette Central academic forms website (http://www.marquette.edu/mucentral/registrars/policy_forms.shtml) and submitting it as indicated on the form, or submitting an online request via the National Student Clearinghouse (http://www.studentclearinghouse.org). Current students may request a transcript online via their CheckMarq account. Submit all transcript requests a minimum of one week in advance of the date the transcript is needed.
The fee for regular transcript service is $7.00 per transcript (3 business days). The fee for expedited transcript service is $30.00 per transcript (same day service). Additional FedEx fees apply. All transcript fees are due at the time of the request.

Every transcript that is issued directly to students is clearly marked. Because most institutions do not accept a transcript that is delivered by students, it is strongly recommended that students request the Office of the Registrar mail or send an electronic transcript directly to the institution involved. Students who fail to follow this recommendation are liable for any further charges when additional transcripts are needed.

Veterans Benefits

The Office of the Registrar acts as liaison between students and the Veterans Administration, the Wisconsin Department of Military Affairs and the Wisconsin Department of Veterans Affairs. Students eligible to receive educational benefits under one of the various federal Veterans Administration programs and State of Wisconsin programs must, at the beginning of each term for which they are registered, complete and/or submit the Marquette Application for Certification of VA Educational Benefits. First time VA benefit applicants or transfer students may need to furnish additional documentation. For more information on how to apply for Veterans’ educational benefits, visit the Marquette Central Veteran's Benefits website (http://www.marquette.edu/mucentral/Registrar/vet_index.shtml/). Information or consultation regarding Veterans educational benefits is available at any time during regular Marquette Central (http://www.marquette.edu/mucentral/) office hours.

Marquette participates in the Yellow Ribbon Program (http://www.marquette.edu/mucentral/Registrar/vet_yellowribbon.shtml/), a Post-9/11 GI Bill/Forever GI Bill enhancement program for students who qualify for 100% of the Post-9/11 GI Bill/Forever GI Bill. This program allows institutions of higher learning in the United States to voluntarily enter into an agreement with the VA to fund some or part of the tuition expenses of these students beyond the Post-9/11 GI Bill/Forever GI Bill annual cap.

Federal Law requires that educational assistance benefits to Veterans and other eligible students be discontinued when these students cease to make satisfactory progress toward their degree objective. Individuals who wish to receive Veterans educational benefits must qualify and meet the published academic standards and requirements of the university in order to be certified for Veterans educational benefits. Only courses that apply to a degree program may be certified for VA educational benefits; and students must inform the Office of the Registrar of changes to their enrollment after certification is submitted for the term.

Haggerty Museum of Art

The Haggerty Museum of Art advances Marquette University’s mission by enriching the intellectual and creative lives of students and communities at large through engagement with the museum’s collections, exhibitions and programs.

The Haggerty Museum of Art, an academic museum committed to advancing social justice through meaningful aesthetic experiences, plays a unique role in the Milwaukee community. The Haggerty engages both academic and general audiences in high-impact, interdisciplinary, object-based learning experiences that span subjects from English to Engineering. More than half of Marquette University’s students experience the museum’s innovative exhibitions, programs and collections each year. The Haggerty Museum of Art is open every day. Museum admission is always free, to everyone. For more information, visit the Haggerty Museum of Art website (http://www.marquette.edu/haggerty/permanent_collection.shtml/).

Hartman Literacy and Learning Center

The Hartman Literacy and Learning Center is a facility within the College of Education, which supports undergraduate literacy-related programs. The center’s library houses a children’s literature collection, which is used by College of Education students as well as children participating in the center’s after school tutoring program, collaborations between the university and neighborhood elementary schools. Students enrolled in EDUC 4964 Teaching Elementary Level Reading Practicum participate by tutoring small groups of children in reading and writing after school. The Hartman Literacy and Learning Center provides faculty and staff to support and conduct research. For more information, visit the Hartman Center website (http://www.marquette.edu/education/centers_clinics/hlc.shtml/).

Libraries Overview

Marquette’s Raynor Memorial Libraries and Ray and Kay Eckstein Law Library support the university’s teaching, research and service mission by providing access to vast collections of recorded knowledge as well as a variety of research services, friendly expertise, technology tools and collaborative spaces.

Raynor Memorial Libraries

Raynor Memorial Libraries, positioned at the physical and intellectual center of campus, offers a host of services, resources and spaces to help the Marquette community learn, discover and share knowledge. Although it has the footprint of a single library, Raynor Memorial Libraries is comprised of two distinct buildings, Raynor Library (built in 2003) and Memorial Library (built in 1957).

Raynor Library, open 24/7 during the fall and spring terms, offers a variety of study areas and reservable study rooms. In addition, it is home to many services—including research support, digital scholarship tools and expertise and funding information—and centers for writing and faculty development. Raynor Library is also home to the Department of Special Collections and University Archives, whose unique holdings include J.R.R. Tolkien manuscripts, Dorothy Day’s papers, Marquette’s historical records and a sizeable rare-book collection. Additionally, Raynor Library houses a collection of Milwaukee music recordings and two contemporary collections on Christian and Catholic spirituality.
Memorial Library connects to Raynor Library via the 2nd-level bridge, which is home to the popular Brew @ the Bridge café. In Memorial Library, the majority of the library’s 1.5 million-volume printed research collection is available for browsing and borrowing. The building also hosts a variety of quiet study spaces and reservable research carrels for graduate students and faculty.

In addition to its physical spaces, Raynor Memorial Libraries offers an ever-growing suite of digital collections and services. Online collections include about 500 research databases, 2.5 million e-books, 63,000 journals and 24,500 online materials produced by Marquette’s own scholarly community. Online services include subject-based research guides and online research assistance via text, e-mail and 24/7 chat.

For more information on Raynor Memorial Libraries, visit the Raynor Memorial Libraries website (http://www.marquette.edu/library/).

Law Library

The primary mission of the Marquette University Law Library is to support the research activities of the Marquette University Law School students and faculty. The law librarians who hold both a law degree and a library degree teach a variety of law-related research courses within the law school and a number of legal research sessions for various departments on campus.

The Law Library is located in Eckstein Hall. The Law Library maintains a comprehensive electronic and a selective print collection of primary legal materials from all federal and state jurisdictions as well as a collection of selected international and comparative legal materials. In addition, the Law Library provides the entire campus with electronic subscriptions to Proquest federal legislative history materials, to HeinOnline, and to Cheetah. The Law Library is a selective depository of federal government law-related documents. The Law Library subscribes to a number of electronic legal research databases available to anyone using the Law Library. Law Library users may also access a comprehensive collection of both print and electronic Wisconsin legal research resources while in the law building.

Research Centers and Institutes

In order to foster and enhance research and study at Marquette University, a number of units on campus have established thematic research centers and institutes. These centers and institutes offer the opportunity for active collaboration and research in a variety of categorical areas.

The centers generally are designed to bring an interdisciplinary focus to the study of complex problems and involve the participation of several faculty members. Opportunities are available for student participation in the programs of several of the centers and institutes.

The Office of the Provost maintains a list of currently active centers and institutes (http://www.marquette.edu/research/centers.php).
Tuition, Fees and Housing

Marquette University Payment Policy

The staff in Marquette Central is dedicated to serving our students and families in a professional and friendly manner while following the policies and procedures set forth by the university. The office provides accurate and timely information about student accounts while encouraging our students to be active participants in managing their account.

Marquette University sends a monthly electronic billing statement to students that have an account balance. Students may also view their e-bill via CheckMarq. Payment due dates are available on the Marquette Central website (http://www.marquette.edu/mucentral/). The final step to complete registration is payment in full of all fees for the term. It is the responsibility of students to pay tuition, fees and housing by the published due date whether they receive a bill or not.

Students who do not plan to attend the university are responsible for dropping classes through CheckMarq and notifying their respective college office. All courses for which students are officially registered as of the close of registration are subject to tuition, fee assessment and payment, and as such appear as part of their permanent record even if they do not attend any class periods. To avoid unnecessary charges and permanent failing or withdrawn grades on their permanent record, it is the responsibility of students to review their official registration prior to the end of registration for the session in which the course is scheduled and ensure it accurately reflects the courses in which they plan to be enrolled. Students assume responsibility for the consequences that ensue as a result of any failed or withdrawl grade. These consequences include but are not limited to: a delay in graduation, dismissal from the degree program, denial of readmission, external institutions/entities viewing these grades as failing grades, loss of eligibility for certain scholarships and/or financial aid, loss of full-time status and/or loss of a refund.

Registration is not considered complete until all tuition and fees are paid, enrolls in the Marquette Monthly Payment Plan (http://www.marquette.edu/ mucentral/bursar/payment_plans_index.shtml/), or submits a billing authorization from an approved sponsor. Students whose accounts reflect that the payment has not been made, or that are otherwise delinquent have a registration block, transcript block and diploma block placed on their accounts. There is a $100.00 fee for the removal of the block. Failure to pay any balance when due may result in the cancellation of students' registration for the current academic term, referral of the account to a collection agency, legal action to collect any balance due or any combination thereof. If the university must take legal action to collect any unpaid balance, students are responsible for all fees and costs incurred by the university to collect the unpaid balance.

Payment Options

Traditional Term Payment

Payment of all tuition, housing and other billed charges is due in full prior to the beginning of each term.

- Cash and checks are acceptable methods of payment.
- Payment may also be made electronically (direct debit from checking or savings account) by accessing the link on the Marquette Central website (http://www.marquette.edu/mucentral/).
- Credit card payment is available through a third-party provider. The service fee for using this service is variable depending on the amount of the charge. This service may be accessed through the link on the Marquette Central website (http://www.marquette.edu/mucentral/) or by calling (866) 893-4518.

Marquette Monthly Payment Plan

Marquette offers a payment plan during the fall and spring terms administered by Tuition Management Systems Inc. The Marquette Monthly Payment Plan allows students and their families to pay tuition, fees, university housing and/or meal charges in five equal monthly installments. There is a $35 per term enrollment fee, but there are no interest charges involved.

Payment by a University Approved Third-Party Sponsor

The Office of the Bursar works with students who receive tuition assistance through a third party. The third party is billed for all or part of a student’s financial account charges after the university registration add/drop date.

Note: If your employer requires grades prior to paying for a class, we cannot set them up as a third-party sponsor.

Tuition Discounts

Audit: A 50% discount on tuition is applied to per-credit charges for courses taken as audit (no credits earned). Students interested in taking a course on an audit basis must first register for the course for credit, then request a change in enrollment status to audit by informing the Graduate School. Students must notify the Graduate School by the close of late registration by submitting the Registration Change Request form found on the Graduate School forms website (http://www.marquette.edu/grad/forms_index.shtml/). Students must have the proper background and prerequisites for the course in question. Auditors are required to attend all classes and are expected to participate, based on the nature of the course, and/or complete assignments, at the discretion of the instructor. Students using the audit discount are not eligible for the senior citizen discount.
Senior Citizen: A 50% discount on tuition only is available to individuals 62 years of age and older taking graduate courses for credit. This opportunity is offered to students who have the proper background and prerequisites for the course in question. Students using the senior citizen discount are not eligible for the audit discount.

All rates in this bulletin are believed accurate and current when printed. However, Marquette University reserves the right to modify any rate to correct a printing mistake or to respond to any unforeseeable change in circumstances, e.g., energy surcharge, governmental action, etc.

**Tuition**

Graduate students are assessed at the per credit hour rate based on their academic plan for all registered courses, graduate or undergraduate.

<table>
<thead>
<tr>
<th>Program</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate</td>
<td>$1,205.00 / credit</td>
</tr>
<tr>
<td>Education Graduate students with an academic plan of: CECP, COPS, CMHC, EDUC, EDPL, EDPS and SCCN</td>
<td>$900.00 / credit</td>
</tr>
<tr>
<td>English as a Second Language courses - Cost per credit hour</td>
<td>$985.00 / credit</td>
</tr>
</tbody>
</table>

**Program**

<table>
<thead>
<tr>
<th>Program</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.S.N. Program for Non-Nursing Graduates 18-month program charged as follows:</td>
<td></td>
</tr>
<tr>
<td>On-Campus Location</td>
<td></td>
</tr>
<tr>
<td>Continuing students (graduating December 2020) billed $10,000 for summer 2020 and fall 2020</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>New students (start summer 2020) billed $11,400 for summer 2020, fall 2020, spring 2021, summer 2021, and fall 2021</td>
<td>$57,000.00</td>
</tr>
<tr>
<td>New students (start summer 2021) billed $12,000 for summer 2021, fall 2021, spring 2022, summer 2022, and fall 2022</td>
<td>$57,000.00</td>
</tr>
<tr>
<td>Pleasant Prairie Location</td>
<td></td>
</tr>
<tr>
<td>Continuing students (graduating spring 2021) billed $10,666 for summer 2020; $9,000 for fall 2020 and spring 2021</td>
<td>$28,666.00</td>
</tr>
<tr>
<td>Continuing students (graduating summer 2021) billed $11,400 for summer 2020, fall 2020, spring 2021, and summer 2021</td>
<td>$45,600.00</td>
</tr>
<tr>
<td>New students (start fall 2020) billed $11,400 for fall 2020, spring 2021, summer 2021, fall 2021, and spring 2022</td>
<td></td>
</tr>
<tr>
<td>New students (start spring 2021) billed $12,000 for spring 2021, summer 2021, fall 2021, spring 2022, and summer 2022</td>
<td></td>
</tr>
</tbody>
</table>

Endodontics, orthodontics, periodontics and prosthodontics: flat rate applies (see below).

**Endodontics**

<table>
<thead>
<tr>
<th>Program</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer term</td>
<td>$9,720.00</td>
</tr>
<tr>
<td>Fall term</td>
<td>$19,430.00</td>
</tr>
<tr>
<td>Spring term</td>
<td>$19,430.00</td>
</tr>
</tbody>
</table>

**Orthodontics**

<table>
<thead>
<tr>
<th>Program</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthodontics - Continuing</td>
<td></td>
</tr>
<tr>
<td>Summer term</td>
<td>$9,760.00</td>
</tr>
<tr>
<td>Fall term</td>
<td>$19,540.00</td>
</tr>
<tr>
<td>Spring term</td>
<td>$19,540.00</td>
</tr>
<tr>
<td>Orthodontics - Incoming</td>
<td></td>
</tr>
<tr>
<td>Summer term</td>
<td>$9,960.00</td>
</tr>
<tr>
<td>Fall term</td>
<td>$19,930.00</td>
</tr>
<tr>
<td>Spring term</td>
<td>$19,930.00</td>
</tr>
</tbody>
</table>
### Periodontics

<table>
<thead>
<tr>
<th>Program</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer term</td>
<td>$8,360.00</td>
</tr>
<tr>
<td>Fall term</td>
<td>$16,720.00</td>
</tr>
<tr>
<td>Spring term</td>
<td>$16,720.00</td>
</tr>
</tbody>
</table>

### Prosthodontics

<table>
<thead>
<tr>
<th>Program</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-refundable deposit, which is then applied toward tuition.</td>
<td>$3,000.00</td>
</tr>
<tr>
<td>Summer term</td>
<td>$5,420.00</td>
</tr>
<tr>
<td>Fall term</td>
<td>$10,820.00</td>
</tr>
<tr>
<td>Spring term</td>
<td>$10,820.00</td>
</tr>
</tbody>
</table>

### Continuous Enrollment/Continuation Course Fees

<table>
<thead>
<tr>
<th>Program</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Standing Continuation (less than half-time, LHT) = 9970</td>
<td>$100.00</td>
</tr>
<tr>
<td>Graduate Fellowship (full-time, FT) = 9974</td>
<td>$100.00</td>
</tr>
<tr>
<td>Graduate Assistant Teaching (full-time, FT) = 9975</td>
<td>$100.00</td>
</tr>
<tr>
<td>Graduate Assistant Research (full-time, FT) = 9976</td>
<td>$100.00</td>
</tr>
<tr>
<td>Master's Comprehensive Exam Preparation (less than half-time, LHT) = 9984</td>
<td>$100.00</td>
</tr>
<tr>
<td>Master's Comprehensive Exam Preparation (half-time, HT) = 9985</td>
<td>$100.00</td>
</tr>
<tr>
<td>Master's Comprehensive Exam Preparation (full-time, FT) = 9986</td>
<td>$100.00</td>
</tr>
<tr>
<td>Doctoral Comprehensive Exam Preparation (less than half-time, LHT) = 9987</td>
<td>$100.00</td>
</tr>
<tr>
<td>Doctoral Comprehensive Exam Preparation (half-time, HT) = 9988</td>
<td>$100.00</td>
</tr>
<tr>
<td>Field Placement Continuation (less than half-time, LHT) = 9977</td>
<td>$100.00</td>
</tr>
<tr>
<td>Field Placement Continuation (half-time, HT) = 9978</td>
<td>$100.00</td>
</tr>
<tr>
<td>Field Placement Continuation (full-time, FT) = 9979</td>
<td>$100.00</td>
</tr>
<tr>
<td>Professional Project Continuation (less than half-time, LHT) = 9991</td>
<td>$100.00</td>
</tr>
<tr>
<td>Professional Project Continuation (half-time, HT) = 9992</td>
<td>$100.00</td>
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<tr>
<td>Professional Project Continuation (full-time, FT) = 9993</td>
<td>$100.00</td>
</tr>
<tr>
<td>Master's Thesis Continuation (less than half-time, LHT) = 9994</td>
<td>$100.00</td>
</tr>
<tr>
<td>Master's Thesis Continuation (half-time, HT) = 9995</td>
<td>$100.00</td>
</tr>
<tr>
<td>Master's Thesis Continuation (full-time, FT) = 9996</td>
<td>$100.00</td>
</tr>
<tr>
<td>Doctoral Dissertation Continuation (less than half-time, LHT) = 9997</td>
<td>$100.00</td>
</tr>
<tr>
<td>Doctoral Dissertation Continuation (half-time, HT) = 9998</td>
<td>$100.00</td>
</tr>
<tr>
<td>Doctoral Dissertation Continuation (full-time, FT) = 9999</td>
<td>$100.00</td>
</tr>
</tbody>
</table>

### Service Fees

<table>
<thead>
<tr>
<th>Program</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Fee</td>
<td>$50.00</td>
</tr>
<tr>
<td>Block Removal Fee</td>
<td>$100.00</td>
</tr>
<tr>
<td>Diploma Fee, Replacement</td>
<td>$25.00</td>
</tr>
<tr>
<td>Doctoral Dissertation Publication Fee (Open Access)</td>
<td>$95.00</td>
</tr>
<tr>
<td>Examination, Marquette Second Language Test, for each attempt</td>
<td>$100.00</td>
</tr>
<tr>
<td>Examination, Special or Delayed</td>
<td>$25.00</td>
</tr>
<tr>
<td>Master's Thesis Publication Fee (Open Access)</td>
<td>$95.00</td>
</tr>
<tr>
<td>Readmission Fee</td>
<td>$100.00</td>
</tr>
<tr>
<td>Transcript Fee</td>
<td>$7.00</td>
</tr>
<tr>
<td>Transcript and Enrollment Verification Fee, Rush Processing</td>
<td>$30.00</td>
</tr>
</tbody>
</table>
### Nursing Fees

<table>
<thead>
<tr>
<th>Program</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiopulmonary Resuscitation (CPR) Certification (approximate fee). (This certification must be maintained throughout the student's program through biannual recertification.)</td>
<td>$60.00</td>
</tr>
<tr>
<td>Health requirements and criminal background check initial fee (approximate fee) and drug test. Additional costs may be required for immunizations, antibody titers and physical examinations. (castlebranch.com).</td>
<td>$124.00</td>
</tr>
<tr>
<td>Clinical tracking system fee (<a href="http://www.typhongroup.com/products.html">http://www.typhongroup.com/products.html</a>) for M.S.N./D.N.P. students in the specialty clinicals. One-time fee.</td>
<td>$80.00</td>
</tr>
<tr>
<td>Additional fees for Direct Entry M.S.N. students:</td>
<td></td>
</tr>
<tr>
<td>Non-refundable deposit, which is then applied toward tuition, for students admitted to the Milwaukee and Pleasant Prairie locations.</td>
<td>$500.00</td>
</tr>
<tr>
<td>Assessment Tests, predictor examination, and NCLEX review course for the M.S.N. program for Non-Nursing Graduates. (Approximate fee. Exact amount based upon vendor costs in effect at time of registration.)</td>
<td>$500.00</td>
</tr>
<tr>
<td>Uniforms for the M.S.N. program for Non-Nursing Graduates. (Approx. fee. Must be purchased through a private vendor. Vendor list available from the College of Nursing.)</td>
<td>$300.00</td>
</tr>
<tr>
<td>Assessment Equipment for the M.S.N. program for Non-Nursing Graduates. (Stethoscope $70. Sphygmomanometer $60. Approx. fee. Exact amt. based upon vendor costs in effect at time of registration. Must be purchased through a private vendor.)</td>
<td>$175.00</td>
</tr>
<tr>
<td>Program fees for Nurse Anesthesia students:</td>
<td></td>
</tr>
<tr>
<td>Non-refundable deposit, which is then applied toward tuition and fees.</td>
<td>$1,000.00</td>
</tr>
<tr>
<td>Annual, nonrefundable, technology and evaluation fee to be paid in full at the start of each fall term.</td>
<td>$2,659.00</td>
</tr>
<tr>
<td>Annual malpractice insurance fee to be paid in full at the start of each fall term. Coverage must be maintained throughout the program.</td>
<td>$275.00</td>
</tr>
<tr>
<td>Additional expenses, including: associate membership with AANA; BLS/ACLS/PALS certification; scrub attire and lab coat; clinical verification process.</td>
<td>Variable</td>
</tr>
</tbody>
</table>

### Housing

The Office of University Apartments and Off-campus Student Services exists to assist current and prospective Marquette students in their search for apartment housing on and around the Marquette campus. Our office provides a comprehensive, searchable website (http://www.marquette.edu/offcampus/) to help you locate appropriate housing around the Marquette campus. This website is the primary resource students use to find housing in the near-Marquette neighborhood. In order to be listed on our site, a property must be located within the Marquette University Police Department patrol area. The site not only lists a majority of the properties located in the immediate Marquette neighborhood, but it also offers useful information on safety, budgeting and campus and community resources. UAOCSS is located at 1500 W. Wells Street and is open Monday through Friday from 8:00 a.m. to 4:30 p.m.

### Meal Plans

Meal plans are available for purchase through the Office of Residence Life, and are automatically renewed for the second term unless cancelled through the office. Prices are per term.

<table>
<thead>
<tr>
<th>Program</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anytime Dining Plan</td>
<td>$2,350.00</td>
</tr>
<tr>
<td>50 meals (commuters only)</td>
<td>$436.00</td>
</tr>
</tbody>
</table>

### Refunds and Adjustments

Students who have prepaid charges but do not register for classes are given a full refund, less applicable non-refundable deposits. Students who register for classes and subsequently change their course load through either a partial withdrawal from courses or a complete withdrawal from the university have adjustments made to their student accounts. The date on which the Withdrawal form is submitted to the university is the date used for any refund calculation. Students assume responsibility for the consequences that ensue as a result of any withdrawal grade. These consequences include but are not limited to: a delay in graduation, dismissal from degree program, external/entities viewing these grades as failing grades, loss of
eligibility for certain scholarships and/or financial aid, loss of full-time status and/or loss of a refund. See this bulletin for a full description of withdrawal procedures.

After the first class, laboratory and special course fees are non-refundable. Tuition deposits are non-refundable but are applied toward first term tuition charges.

Refunds for tuition and board are given based on the following schedules:

**Tuition Refund and Adjustment Schedule**

<table>
<thead>
<tr>
<th>Refund</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>Through registration</td>
</tr>
<tr>
<td>80%</td>
<td>During the second week</td>
</tr>
<tr>
<td>60%</td>
<td>During the third week</td>
</tr>
<tr>
<td>40%</td>
<td>During the fourth week</td>
</tr>
<tr>
<td>20%</td>
<td>During the fifth week</td>
</tr>
<tr>
<td>No Refund</td>
<td>After the fifth week</td>
</tr>
</tbody>
</table>

- No refund is given for any course, credit-bearing or otherwise, in which a student is enrolled after the 'No Refund' period of the session in which the course is scheduled. For a 16-week term, this would be the fifth week of the term, as indicated above.

**Board** - Pro-rated; number of full weeks remaining in term as a percent of 16 weeks.
Programs and Courses of the Graduate School

These Web pages describe the graduate degree programs offered at Marquette University and include information on all graduate courses for Graduate School programs. Prospective students are reminded to also read the other sections of this bulletin for general information on Graduate School admission requirements, academic regulations and academic programs.
Applied Statistics (APST)

Chairperson: Rebecca L. Sanders, Ph.D.
Program Director: Daniel Rowe, Ph.D.


Degree Offered

Master of Science, students are admitted under Plan B (non-thesis option) but may request Plan A (thesis option).

Program Description

The master of science program in applied statistics offered by the Department of Mathematical and Statistical Sciences produces graduates who deal with big data, perform statistical analysis to detect hidden patterns in data, perform risk factor analysis and perform predictive analysis. Statistics is the science of data utilizing a principled foundation in mathematics with applications in many fields such as social sciences, engineering, business, biomedical sciences and economics. The master of science in applied statistics is intended for students who have a mathematical background (not necessarily having a degree in mathematics) that want to develop strong data analytic skills to solve complex, real world problems. This program meets the needs for recent graduates who are seeking a master’s degree program in applied statistics, and for mid-career workers with a solid mathematics and/or statistics background who are seeking a graduate program in applied statistics either for career advancement or for a career change. Students may select courses from a large number of approved courses offered by the Department of Mathematical and Statistical Sciences and other units on campus.

Students may pursue the degree on a full-time or part-time basis. Full-time, dedicated students can complete the degree in as little as 12 months. Most courses are offered in the evenings.

Prerequisites for Admission

Applicants must have completed or are in the process of completing a bachelor's degree from an accredited college or university. Admission to the master of science program in applied statistics is based on a sufficient formal mathematics and/or statistics background and a previous experience with programming. The applied statistics program accommodates students from a wide variety of disciplines.

Application Deadline

The master of science program in applied statistics follows the Graduate School deadlines for the submission of applications: August 1 for fall admission, December 15 for spring admission, and May 1 for summer admission. However, to be considered for financial aid, applications for fall must be submitted by January 15. Decisions about acceptance into the program are made when all required documents for the application are received. Admission decisions are made independently of decisions to offer financial aid.

Application Requirements

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. An essay outlining relevant work experience or education, career goals, possible areas of interest and reasons for seeking admission to this program.
4. Three letters of reference from professors or professionals familiar with the applicant's abilities, academic work and/or professional background.
5. (For students applying for merit-based financial aid only) GRE scores (General Test only).
6. (For international applicants who have not attended an English-speaking university only) a TOEFL score or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms is placed on the student record.

General Information

Students interested in applying to the program should consult the program website (http://marquette.edu/mscs/grad-applied-statistics.shtml/) for additional information, including a list of currently approved courses for the degree.

A complete list and short description of the courses offered by the Department of Mathematical and Statistical Sciences (MSSC) is available on the MSSC department page of the bulletin (http://bulletin.marquette.edu/grad/programs/mathstatsandcomputerscience/).
Applied Statistics Master’s Requirements

A master’s student is admitted to the non-thesis program (Plan B). A formal request to pursue a thesis (Plan A) must be approved by the department’s applied statistics program director, the department’s Graduate Committee and the Graduate School.

Plan A

All Plan A students must complete a minimum of 30 credit hours (21 credits of program core courses, 3 approved elective credits and 6 credits of MSSC 6999 Master’s Thesis), and submit a thesis that must be an original contribution to the student’s field of study. A public defense of the thesis is required.

Required Core courses (21 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSSC 5710</td>
<td>Mathematical Statistics</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 5780</td>
<td>Regression Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6010</td>
<td>Computational Probability</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6020</td>
<td>Statistical Simulation</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6040</td>
<td>Applied Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6240</td>
<td>Design and Analysis of Scientific Experiments</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6250</td>
<td>Statistical Machine Learning</td>
<td>3</td>
</tr>
</tbody>
</table>

Approved Elective course(s) 3

Master's Thesis/Research:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSSC 6999</td>
<td>Master's Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>

Total Credit Hours 30

Plan B

All Plan B students complete a minimum of 30 credits (21 credits of program core courses, 6 approved elective credits and a 3-credit statistical consulting practicum). A written report and an oral presentation are required for the statistical consulting practicum.

Required Core courses (21 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSSC 5710</td>
<td>Mathematical Statistics</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 5780</td>
<td>Regression Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6010</td>
<td>Computational Probability</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6020</td>
<td>Statistical Simulation</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6040</td>
<td>Applied Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6240</td>
<td>Design and Analysis of Scientific Experiments</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6250</td>
<td>Statistical Machine Learning</td>
<td>3</td>
</tr>
</tbody>
</table>

Approved Elective courses 6

Professional Practice/Statistical Consulting:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSSC 6975</td>
<td>Practicum for Statistical Consulting</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours 30

Plan A and Plan B master’s students may select additional approved elective courses from within the department or from outside departments. For a complete list of approved elective courses outside of the department, consult with the applied statistics program director. The following is a list of approved elective courses within the department:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSSC 5540</td>
<td>Numerical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 5630</td>
<td>Mathematical Modeling and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 5700</td>
<td>Theory of Probability</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 5760</td>
<td>Time Series Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6030</td>
<td>Applied Mathematical Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

For both Plan A and Plan B:

- Depending on the course topic and approval by program director, MSSC 5931 Topics in Mathematical or Statistical Sciences, MSSC 6931 Topics in Mathematical or Statistical Sciences, MSSC 6995 Independent Study in Mathematical or Statistical Sciences or MSSC 6960 Seminar in Mathematical or Statistical Sciences may also be an approved elective course.
A maximum of 6 credit hours of courses may be taken from the Medical College of Wisconsin and the University of Wisconsin-Milwaukee, as allowed under the reciprocal arrangement between Marquette and these institutions, as long as they are pre-approved by the applied statistics program director and the Graduate School.

Master's students who come with little background in statistics may be required to complete MSSC 5720 Statistical Methods during their first term or during the summer before their first fall term. This is in addition to the required course work for Plan A or Plan B.

**Accelerated Degree Program**

The accelerated degree program (ADP) in applied statistics allows students to earn, in five years, a bachelor's degree with an undergraduate major in a variety of fields including, but not limited to: bioinformatics, biomedical engineering, business, chemistry, computational mathematics, computer science, data science, electrical engineering, mathematics, applied mathematical economics, mechanical engineering, physics and psychology, along with the master of science degree in applied statistics. Students complete 12 credit hours of approved graduate courses during their senior undergraduate year that counts as part of the undergraduate credit hour requirement.

Students may obtain both degrees in five years. Students with a GPA of 3.00 or better in their mathematics, science and engineering courses are eligible to apply in their junior year. Up to 12 graduate credits can count toward both degrees.

The Department of Mathematical and Statistical Sciences offers early admission into the master of science in applied statistics program. Marquette undergraduate students majoring in the above listed majors and others can apply for this program in the second term of their junior year.

**Courses**

**MSSC 5020. The Teaching of Mathematics. 3 cr. hrs.**
Historical background, problems, curricular materials, and teaching procedures in the various areas of mathematics pertinent to the needs of a secondary school mathematics teacher. In addition, a three-hour time block on one day each week between 8 a.m. and 3 p.m. must be kept free for clinical experience.

**MSSC 5030. Concepts in Geometry and Calculus from an Advanced Standpoint. 3 cr. hrs.**
Topics chosen primarily from geometry and calculus, taught from an advanced standpoint to enrich and deepen the student's understanding. Emphasis on alternative approaches, generalizations, historical contexts and connections with prior mathematical studies.

**MSSC 5040. Concepts in High School Algebra and Number Theory from an Advanced Standpoint. 3 cr. hrs.**
Topics closely related to the high school mathematics curriculum, chosen primarily from algebra and number theory, taught from an advanced standpoint to enrich and deepen the student's understanding. Emphasis on alternative approaches, generalizations, historical contexts and connections with prior mathematical studies.

**MSSC 5120. Abstract Algebra 1. 3 cr. hrs.**
Sets, mappings, operations on sets, relations and partitions. A postulational approach to algebraic systems including semigroups, groups, rings and fields. Homomorphisms of groups and rings, number systems, polynomial rings.

**MSSC 5121. Abstract Algebra 2. 3 cr. hrs.**
A continuation of MSSC 5120 with emphasis on groups, rings, fields and modules.

**MSSC 5200. Intermediate Analysis 1. 3 cr. hrs.**
Limits and continuity, differentiability, Riemann integration. Topology of N-dimensional spaces.

**MSSC 5201. Intermediate Analysis 2. 3 cr. hrs.**
Transformations of N-spaces, line and surface integrals, sequences and series, uniform convergence.

**MSSC 5210. Complex Variables. 3 cr. hrs.**
Complex numbers, analytic functions, differentiation, series expansion, line integrals, singularities and residues.

**MSSC 5310. History of Mathematical Ideas. 3 cr. hrs.**
Topics selected from the following: development of the number system (need for irrational and complex numbers); development of geometry including the effects of the discovery of non-Euclidean geometry; limit concept; need for axiomatic structures; twentieth-century problems. Current mathematics research and place of mathematics in today's world.

**MSSC 5320. Theory of Numbers. 3 cr. hrs.**
Integers, unique factorization theorems, arithmetic functions, theory of congruences, quadratic residues, partition theory.

**MSSC 5420. Foundations of Geometry. 3 cr. hrs.**
Modern postulational development of Euclidean and non-Euclidean geometries.

**MSSC 5450. Topology. 3 cr. hrs.**
Topological spaces, mappings, metric spaces, product and quotient spaces. Separation axioms, compactness, local compactness and connectedness.

**MSSC 5500. Theory of Differential Equations. 3 cr. hrs.**
Existence and uniqueness theorems, linear and non-linear systems, numerical techniques, stability.
MSSC 5510. Elementary Partial Differential Equations. 3 cr. hrs.
Fourier series, method of separation of variables, eigenfunction expansions, application of eigenfunctions to partial differential equations, Green's functions and transform methods.

MSSC 5540. Numerical Analysis. 3 cr. hrs.
Numerical solution of algebraic and transcendental equations, linear systems and the algebraic eigenvalue problem, interpolation and approximation, numerical integration, difference equations, numerical solution of differential equations and finite difference methods.

MSSC 5630. Mathematical Modeling and Analysis. 3 cr. hrs.
Construction and analysis of mathematical models from biological, behavioral and physical sciences.

MSSC 5650. Theory of Optimization. 3 cr. hrs.
Fundamental theorems describing the solution of linear programs and matrix games. Minimax, duality, saddle point property, simplex and specialized algorithms. Zero sum games, transportation and assignment problems, applications to economics.

MSSC 5670. Applied Combinatorial Mathematics. 3 cr. hrs.
Permutations and combinations, recurrence relations, inclusions and exclusion, Polya's theory of counting, graph theory, transport networks, matching theory.

MSSC 5700. Theory of Probability. 3 cr. hrs.
Random variables, distributions, moment generating functions of random variables, various derived probabilistic models and applications.

MSSC 5710. Mathematical Statistics. 3 cr. hrs.
Sampling theory and distributions, estimation and hypothesis testing, regression, correlation, analysis of variance, non-parametric methods, Bayesian statistics.

MSSC 5720. Statistical Methods. 3 cr. hrs.
Probability, discrete and continuous distributions. Treatment of data, point and interval estimation, hypothesis testing. Large and small sample method, regression, non-parametric methods. An introduction to the basic understanding of statistical methods. Applications-oriented.

MSSC 5740. Biostatistical Methods and Models. 3 cr. hrs.
Introduction to the statistics of life science and the use of mathematical models in biology. Data analysis and presentation, regression, analysis of variance, correlation, parameter estimation and curve fitting. Biological sequence analysis, discrete and continuous mathematical models and simulation.

MSSC 5760. Time Series Analysis. 3 cr. hrs.

MSSC 5780. Regression Analysis. 3 cr. hrs.
Basic concepts of statistical inference, simple linear regression, multiple linear regression, diagnostic analysis, selecting the best equation, stepwise methods, nonlinear regression, use of statistical software.

MSSC 5931. Topics in Mathematical or Statistical Sciences. 1-3 cr. hrs.
Topics selected from one of the various branches of mathematics or statistics. Specific topics to be announced in the Schedule of Classes.

MSSC 6010. Computational Probability. 3 cr. hrs.
Foundations of probability for modeling random processes and Bayesian approaches, including: counting techniques, probability of events, random variables, distribution functions, probability functions, probability density functions, expectation, moments, moment generating functions, special discrete and continuous distributions, sampling distributions, prior and posterior distributions, Law of Large Numbers, Central Limit Theorem, Bayesian paradigm. Prereq: Three semesters of mathematics beyond calculus and MATH 4720 or equiv.

MSSC 6020. Statistical Simulation. 3 cr. hrs.

MSSC 6030. Applied Mathematical Analysis. 3 cr. hrs.
Foundational topics in analysis considered from a modeling and numerical viewpoint. Emphasizes techniques of proof and approximation, and their role in the solution of problems arising in applications. Prereq: Multivariable calculus and linear algebra.

MSSC 6040. Applied Linear Algebra. 3 cr. hrs.
Foundational linear algebra considered from a numerical viewpoint. Focuses on solutions of linear systems of equations, eigenvalues and eigenvectors, and transformations. Emphasizes and illustrates proof and numerical implementation using problems arising in applications. Prereq: Multivariable calculus and linear algebra.

MSSC 6090. Research Methods/Professional Development. 1 cr. hr.
Designed to introduce the process of research and communication of research in the mathematical and statistical sciences, including presentation and publication of research, preparation of grant proposals, and ethical considerations. May be repeated.
MSSC 6110. Applied Discrete Mathematics. 3 cr. hrs.
Applied discrete mathematics for the mathematics, engineering and computer science graduate student. Emphasis on graph theory and counting problems that serve as a foundation for research areas in the second term. Theory and applications are covered for topics including trees, graph coloring, chromatic polynomials, generating functions, recurrence relations, distinct colorings and Polya's Theorem. Prereq: COSC 1020 and MATH 1450 or equiv.; MATH 1451 and MATH 2100 or equiv.

MSSC 6120. Optimization. 3 cr. hrs.

MSSC 6130. Dynamical Systems. 3 cr. hrs.
Theory of discrete and continuous dynamical systems. Periodic solutions, bifurcations, chaotic systems, attractors, fractal dimension and simulation of these systems. Prereq: MATH 4200 or equiv.

MSSC 6210. Theory of Statistics. 3 cr. hrs.
Brief review of sampling distributions, Central Limit Theorem and Law of Large Numbers. Estimation, testing hypotheses, regression and correlation analysis, non-parametric methods. Prereq: MATH 4720 or equiv.

MSSC 6220. Analysis of Variance and Covariance. 3 cr. hrs.

MSSC 6230. Multivariate Statistical Analysis. 3 cr. hrs.
Basic properties of random vectors, multivariate normal distribution, estimations of mean vector and covariance matrix, Wishart distribution, hypothesis testing, Hotelling's T2, multivariate analysis of variance, principal component analysis, factor analysis, canonical correlation analysis, classification and discriminant analysis. Prereq: MATH 3100 and MATH 4710.

MSSC 6240. Design and Analysis of Scientific Experiments. 3 cr. hrs.
Single factor, two-factor and multi-factor designs and their analysis, Latin-square design and its analysis; power analysis and sample size selection; 2^k factorial designs; confounding/blocking designs; orthogonality and orthogonal contrasts; 3^k factorial designs; response surface methodology. Prereq: A course in statistical methods, such as MATH 4720 or equiv.

MSSC 6250. Statistical Machine Learning. 3 cr. hrs.
Multivariate data and exploratory analysis, random vector and multivariate normal distribution, multivariate linear regression, principal component and other dimensional reduction techniques, linear discriminant analysis, recursive partition and tree-based methods including classification tree and regression tree, cluster analysis, neural network and support vector machine. Prereq: A course in statistical methods, such as MATH 4720, and a course in linear algebra, such as MATH 3100, MATH 4780 or equiv., cons. of instr.

MSSC 6410. Real Analysis. 3 cr. hrs.
Involves study of algebraic structures of real analysis, function spaces, introduction to linear operators, measure and integration theory, convergence theorems, limits, continuity and derivatives. Prereq: MATH 4200.

MSSC 6420. Algebra. 3 cr. hrs.
Studies groups, rings, fields and vector spaces including Sylow's theorems, field of quotients of an integral domain, structure of finitely generated modules over a principal ideal domain, Galois theory of equations, ordered fields and classical groups. Prereq: MATH 4120 or equiv.

MSSC 6430. Logic and Set Theory. 3 cr. hrs.
Naive set theory, first-order logic, elementary model theory, non-standard analysis, Godel's incompleteness theorems for elementary arithmetic, axioms for set theory, ordinal and cardinal arithmetic, the continuum hypothesis, methods of inner models and forcing for proving consistency and independence results. Prereq: MATH 4120 or equiv.

MSSC 6440. Topology. 3 cr. hrs.
Metric spaces, fundamental topology notions, subspace topology, product spaces, quotient spaces, separation axioms, Tietze's theorem, compactness, metrization, uniform spaces, function spaces, homotopy relation, fundamental group, computing manifold groups. Prereq: MATH 4200 or equiv.

MSSC 6770. Innovations in Secondary Mathematics: Meeting the NCTM Standards. 3 cr. hrs.
Online course designed for teachers of secondary mathematics. Emphasizes relevant NCTM standards through discussion, projects, and implementation in a secondary mathematics classroom. Mathematics content amplifies and extends selected topics of secondary mathematics. Topics vary. Credit may be earned multiple times if completed under a different topic. Prereq: Cons. of dept. ch.; one term of calculus and access to an algebra or geometry class of secondary students; or cons. of course coordinator; admitted to MSST or College of Education.

MSSC 6931. Topics in Mathematical or Statistical Sciences. 3 cr. hrs.
Topics vary. Multiple enrollments allowed under different topics.

MSSC 6953. Seminar in Mathematics Curriculum Development and Material 1. 3 cr. hrs.
The historical evolution of mathematics learning theories and research-generated conceptions of mathematics learning; comparisons of various learning theories and their impact on research in mathematics learning; implications of research and learning theories on curriculum development; implications of mathematics learning research/theories on the teaching and learning of mathematics. Prereq: Admitted to MSST or College of Education.
MSSC 6954. Seminar in Mathematics Curriculum Development and Material 2. 3 cr. hrs.
Philosophy of education with particular attention to mathematics education; development by students of useful curricula in the form of teaching units, evaluation materials, and student and teacher bibliographies for specific topics, grade levels, and ability groups; aspects of supervision as related to the role of department chairperson. Prereq: MSSC 6953; admitted to MSST or College of Education.

MSSC 6960. Seminar in Mathematical or Statistical Sciences. 1-3 cr. hrs.
Topics selected from one of the various branches of mathematics or statistics. Specific topics are announced in the Schedule of Classes.

MSSC 6974. Practicum for Research in Mathematical or Statistical Sciences. 1-3 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

MSSC 6975. Practicum for Statistical Consulting. 3 cr. hrs.
Provides students with the opportunity to explore real-world examples of data analysis as a statistical consultant. Prereq: 3.000 MU GPA; completed at least 12 credit hours; cons. of the applied statistics dir. of graduate studies; or cons. of dept. ch.

MSSC 6995. Independent Study in Mathematical or Statistical Sciences. 1-5 cr. hrs.
Investigations in selected areas of mathematics or statistics. Prereq: Cons. of instr. and cons. of dept. ch.

MSSC 6998. Professional Project in Mathematical or Statistical Sciences. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

MSSC 8995. Independent Study in Mathematical or Statistical Sciences. 1-3 cr. hrs.
In-depth research on a topic or subject matter usually not offered in the established curriculum with faculty and independent of the classroom setting. Prereq: Cons. of instr. and cons. of dept. ch.

MSSC 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.
MSSC 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Bioinformatics (BIIN)

Computer Science Chairperson: Sheikh Ahamed Iqbal, Ph.D.
Mathematical and Statistical Sciences Chairperson: Rebecca L. Sanders, Ph.D.
Program Director: Anne Clough, Ph.D.

Bioinformatics website (https://www.marquette.edu/grad/programs-bioinformatics.php)

Degree Offered

Master of Science, students are admitted under Plan B (non-thesis option) but Plan A (thesis option) is also offered.

Program Description

This interdisciplinary program is jointly offered by Marquette University and Medical College of Wisconsin. The program prepares students for a multidisciplinary career in the biomedical sciences using mathematics, statistics and computer science. It is designed to provide students quantitative tools for analyzing data and problems associated with molecular, cellular, physiological and particularly, genetic systems. Students may select courses from a list of approved courses offered by the following departments at Marquette: Computer Science; Mathematical and Statistical Sciences; Biology; Biomedical Engineering; and Electrical and Computer Engineering. In addition, courses are offered by the Department of Physiology and the Division of Biostatistics at Medical College of Wisconsin. The program meets the needs of recent undergraduates seeking an advanced degree as well as employed professionals interested in opportunities for career advancement.

Students may pursue the degree on a full-time or part-time basis. Many courses are offered evenings.

Prerequisites for Admission

Applicants must have completed or are in the process of completing a bachelor's degree from an accredited college or university. Applicants with degrees in a wide range of scientific areas are considered. These areas include: biological and medical science, computer science, mathematics, statistics, engineering and physical sciences. Students may be admitted on a probationary basis if they are not fully prepared to take courses carrying graduate credit in both computer science and biology.

Application Deadline

To be considered for fall admission, all application requirements must be completed and received in the Graduate School. The priority deadline for review of applications is Jan. 15 for both the master's and doctoral programs. After the priority admission deadline, applications are reviewed on a rolling basis.

Application Requirements

Applicants must submit, directly to the Marquette University Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. An essay outlining relevant work experience or education, career goals, possible areas of interest, and reasons for seeking admission to this program.
4. Three letters of reference from professors or professionals familiar with the applicant's abilities, academic work, and/or professional background.
5. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency. A recent GRE score is strongly recommended.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms are placed on the student record.

General Information

Students interested in applying to the program should consult the program website (https://www.marquette.edu/grad/programs-bioinformatics.php) for a list of currently approved courses and scheduled course offerings for the next term.

Special registration for this program is required, as courses are taken at both institutions. Students must register for BIIN 6947 Medical College of Wisconsin/BIIN-Joint Degree through Marquette University and for the matching MCW course through Medical College of Wisconsin.

Bioinformatics Master's Requirements

Students are admitted to the program under Plan B (non-thesis option), although with the co-directors' approval, students may elect to transfer to Plan A (thesis option). In both options below, courses taken for credit in this program must be from the list of courses approved by the Steering Committee. Exceptions must be approved by the Steering Committee.
### PLAN B OPTION (36 CREDITS)

Students must complete 36 credit hours of course work, of which at least 24 hours must be earned in graduate-level courses (6000-level and above). Plan B Option students must take at least 18 credits at Marquette University.  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIIN 6000</td>
<td>Introduction to Bioinformatics</td>
<td>3</td>
</tr>
<tr>
<td>COSC 6050</td>
<td>Elements of Software Development</td>
<td>3</td>
</tr>
<tr>
<td>BIIN 6980</td>
<td>Practicum in Bioinformatics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3 credits of approved computer science courses at the 6000-level</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3 credits of approved biological science courses at the 6000-level</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3 credits of approved computer science or biological science courses at the 6000-level</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3 credits of approved biological science or computer science courses at the 5000-level</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>15 credits of approved electives</td>
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</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours</strong></td>
<td><strong>36</strong></td>
</tr>
</tbody>
</table>

### PLAN A OPTION (30 CREDITS)

Students must complete 24 credit hours of course work, of which at least 18 credit hours must be earned in graduate-level courses (6000-level and above). Plan A Option students must take at least 15 credits at Marquette University. Students must also complete a master's thesis for 6 credit hours and pass an oral examination concentrated on the thesis.  

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</tr>
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<td></td>
<td>3 credits of approved biological science courses at the 6000-level</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3 credits of approved computer science or biological science courses at the 6000-level</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3 credits of approved biological science or computer science courses at the 5000-level</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3 credits of approved electives</td>
<td>3</td>
</tr>
<tr>
<td>BIIN 6999</td>
<td>Master's Thesis</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

### Courses

**BIIN 6000. Introduction to Bioinformatics. 3 cr. hrs.**  
The application of knowledge gained through previous course work in informatics, information systems, mathematics, medical and/or biological research to the design, development, implementation and evaluation of information systems and analysis methods applied to biomedical data. Prereq: BIOL 1004 and CHEM 2112 which may be taken concurrently; and COSC 2100; and cons. of dept. ch.

**BIIN 6931. Topics in Bioinformatics. 3 cr. hrs.**  
Topics vary. Students may enroll more than once as the subject matter changes. Prereq: Cons. of dept. ch.

**BIIN 6947. Medical College of Wisconsin/BIIN-Joint Degree. 1-8 cr. hrs.**  
Graduate-level course in selected areas of the life sciences offered at Medical College of Wisconsin. Prereq: Cons. of dept. ch.

**BIIN 6960. Seminar in Bioinformatics. 1-3 cr. hrs.**  
Seminars in research and development tools and applications designed for M.S. in bioinformatics program.

**BIIN 6980. Practicum in Bioinformatics. 3 cr. hrs.**  
An opportunity to participate in the practice of research and/or development in the area of bioinformatics. Prereq: Admitted to BIIN program; BIIN 6000; and cons. of dept. ch.

**BIIN 6995. Independent Study in Bioinformatics. 1-3 cr. hrs.**  
An in-depth study on a topic or subject matter usually not offered in the established curriculum with faculty and independent of the classroom setting. Prereq: Admitted to BIIN program; cons. of dept. ch.

**BIIN 6999. Master’s Thesis. 1-6 cr. hrs.**  
S/U grade assessment. Prereq: Cons. of dept. ch.
Biological Sciences (BSCI)

Chairperson: Michelle Mynlieff, Ph.D.
Department of Biological Sciences website (http://www.marquette.edu/biology/graduate-studies.shtml/)

Degrees Offered
Master of Science, Plan A only; Doctor of Philosophy

Program Description
The biological sciences graduate program aspires to train experimental scientists capable of teaching and directing independent research by providing a broad theoretical background and an appreciation for the rigor of the scientific method. This program provides excellent training in modern biology suitable for jobs in academia, industry and government, and offers students research experiences using all areas of modern biological techniques to study molecular, cellular, tissue, organ, systems and organism functioning.

Prerequisites for Admission
Applicants are expected to have completed a bachelor’s degree in biology or related field. As a general rule, strong preference is given to applicants to the doctoral program (https://www.marquette.edu/grad/programs-biological-sciences.php). Only in exceptional circumstances are students admitted to the master’s program. A master's degree is not a prerequisite for admittance to the doctoral program.

Application Deadline
Priority deadline is December 1. This program accepts applicants on a rolling basis as space permits, but first consideration for admission and funding is given to those applications submitted by the priority deadline.

Application Requirements
Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. A personal statement that outlines the applicant’s professional goals and that explains how the Marquette Biological Sciences graduate program fits within these goals. The statement should be as specific as possible, mentioning specific research laboratories or courses of study, as appropriate.
4. Three letters of recommendation that give evidence of the applicant's scholarly promise.
5. GRE General Test is requested, Subject Test is optional.
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

Biological Sciences Master's Requirements
Specializations: Biochemistry, Cell Biology, Developmental Biology, Ecology, Genetics, Microbiology, Molecular Biology, Neurophysiology, Physiology

The program of course work and research for the master’s degree is determined in consultation with the student’s advisory committee. Each student is advised to take such courses as are properly related to academic background and research interests. All master’s students are required to gain the equivalent of one year of teaching experience during the program.

Master’s students must complete a total of 30 credit hours, including 21 credit hours of course work and research, three credit hours of seminar courses and six credit hours of thesis work. Eighteen of the 30 credit hours must be taken in biological sciences. During each term in residency, master’s students are also required to enroll in BIOL 6952 Department Colloquium.

Master’s students must submit a thesis outline to their advisory committee and successfully defend the outline. This defense constitutes the qualifying exam. At the completion of the program, master’s students must submit a thesis that is approved by their advisory committee and must present a public seminar on their thesis research.

Required course work:

Course work selected from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>BIOL 5201</td>
<td>Genomics and Bioinformatics</td>
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<td>Advanced Ecology</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>BIOL 5403</td>
<td>Tropical Ecology in Panama</td>
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<tr>
<td>BIOL 5532</td>
<td>Biochemistry 2: Bioenergetics and Metabolism</td>
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<td>BIOL 8501</td>
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</tr>
<tr>
<td>BIOL 8502</td>
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<td>BIOL 8504</td>
<td>Advanced Survey in Neuroscience</td>
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<td>Cellular Neurophysiology</td>
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<td>BIOL 8520</td>
<td>Behavioral Neuroendocrinology</td>
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<td>BIOL 8530</td>
<td>Glutamate Neurotransmission</td>
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<td>BIOL 8601</td>
<td>Stem Cell Biology</td>
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<td>BIOL 8603</td>
<td>Cell and Molecular Biology of Early Development</td>
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<td>BIOL 8702</td>
<td>Muscle Biology</td>
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<td>BIOL 8704</td>
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<td>BIOL 8803</td>
<td>Microbial Diversity and Ecology</td>
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<td>BIOL 8931</td>
<td>Topics in Biology</td>
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<td>BISC 5140</td>
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<tr>
<td>CHEM 5530</td>
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<tr>
<td>COSC 5610</td>
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Required research credits: 7-5

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<td>BIOL 6096</td>
<td>Laboratory Rotations in Biology</td>
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<tr>
<td>BIOL 6097</td>
<td>Laboratory Research in Biology</td>
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Seminar courses selected from: 3

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<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>BIOL 6005</td>
<td>Scientific Writing Workshop</td>
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<tr>
<td>BIOL 8953</td>
<td>Seminar in Biochemistry and Genetics</td>
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<tr>
<td>BIOL 8954</td>
<td>Seminar in Plant Molecular Biology</td>
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<tr>
<td>BIOL 8955</td>
<td>Seminar in Neuroscience</td>
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<tr>
<td>BIOL 8956</td>
<td>Seminar in Cell and Developmental Biology</td>
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<tr>
<td>BIOL 8957</td>
<td>Seminar in Physiology</td>
</tr>
<tr>
<td>BIOL 8958</td>
<td>Seminar in Ecology and Evolutionary Biology</td>
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Thesis work: 6

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>BIOL 6999</td>
<td>Master's Thesis</td>
</tr>
</tbody>
</table>

Total Credit Hours: 30

**Biological Sciences Doctoral Requirements**

**Specializations:** Biochemistry, Cell Biology, Developmental Biology, Ecology, Genetics, Microbiology, Molecular Biology, Neurophysiology, Physiology
The program of course work and research for the doctoral degree is determined in consultation with the student’s advisory committee. Each student is advised to take such courses as are properly related to academic background and research interests. All doctoral students are required to gain the equivalent of one year of teaching experience during the program.

A doctoral student must complete a program of study, defined in conjunction with their advisory committee, on an approved Doctoral Program Planning Form. Advancement to candidacy for the doctoral degree is considered following successful completion of the lecture course work specified in the Doctoral Program Planning Form and after passing the qualifying exam. Following advancement to candidacy, students must submit a Dissertation Research Plan that is approved by their advisory committee.

A typical doctoral student completes a minimum required 24 credit hours of course work and 12 credit hours of dissertation work. Course work includes a minimum of seven 2-3 credit graduate lecture courses, 5 credits of research, and 5 one-credit seminar courses. Students must take BIOL 6005 Scientific Writing Workshop as one of their five seminar courses. All students must enroll in BIOL 6952 Department Colloquium during each term in residence.

The student must submit and defend a dissertation and present a public research seminar after completing all other formal requirements for the doctoral degree.

Seven Lecture courses selected from the following:

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>BIOL 5102</td>
<td>Experimental Molecular Biology</td>
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<td>BIOL 5201</td>
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Required Research courses: 5

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Required Seminar course: 2

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</thead>
<tbody>
<tr>
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<td>Scientific Writing Workshop</td>
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</table>

Additional 1-credit Seminar courses selected from the following: 4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BIOL 8953</td>
<td>Seminar in Biochemistry and Genetics</td>
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</tbody>
</table>
Courses

BIOL 5102. Experimental Molecular Biology. 3 cr. hrs.
Purification, characterization and molecular analysis of proteins, nucleic acids, lipids and other biomolecules with emphasis on standard techniques widely used in research laboratories. 1 hr. lec., 4 hrs. lab. Prereq: BIOL 3101 or equiv.

BIOL 5201. Genomics and Bioinformatics. 3 cr. hrs.
The analysis of the structure, organization, function and evolution of prokaryotic and eukaryotic genomes. Students gain an understanding of how recent technological advances have revolutionized the field of genomics and of how large genomic datasets are generated, analyzed and visualized.

BIOL 5401. Advanced Ecology. 3 cr. hrs.
Studies the interactions of organisms with each other and their abiotic environments beyond the introductory level. Both mathematical models and the evolutionary genetics involved in ecologically important traits are emphasized. Ecological concepts in current and classical scientific literature are explored. Mathematical and computer models are used to analyze and understand ecological interactions and processes in population, community, ecosystem and evolutionary ecology. These are combined with advanced concepts in population and ecological genetics. 3 hrs. lec, disc.

BIOL 5403. Tropical Ecology in Panama. 3 cr. hrs.
Tropical Ecology is the study of the biotic and abiotic interactions that shape the origin, maintenance and consequences of species diversity in the tropics. The incredibly high species diversity found in tropical forests has intrigued biologists for centuries, including such luminaries as Darwin and Wallace and continues to engage biologists today. Explores a variety of different forest types within the Republic of Panama to gain an appreciation for the basic patterns and processes of tropical forests and the mechanisms believed to be responsible for them. Modeled after the Organization for Tropical Biology’s Tropical Ecology Field Course.

BIOL 5410. Conservation Biology. 3 cr. hrs.
The goals of conservation biology are to understand the causes and consequences of biodiversity loss – from genes to populations to species to ecosystems – and to develop tools and techniques to conserve biodiversity. Reviews what is known about the causes and consequences of current biodiversity loss, established and emerging strategies and tools to conserve biodiversity, and the ecological and evolutionary theory underlying these strategies. Includes population-modeling approaches such as population viability analysis, life-history tables, and sustainable harvest models, and conservation techniques such as species recovery plans, reserve design, habitat suitability models, seed banks, and restoration ecology. Focuses on the implications of biodiversity for ecosystem function and services, as well as the implications of conservation for policy, economics, and society. Builds essential skills for a career in biology, natural-resource management or conservation, including critical review of evidence and scientific literature, quantitative and conceptual modeling and practical decision making.

BIOL 5532. Biochemistry 2: Bioenergetics and Metabolism. 3 cr. hrs.
An exploration of the thermodynamic, cellular and molecular features contributing to the organization and regulation of major metabolic pathways in plants and animals. Major topics focus on the thermodynamic and mechanistic principles governing pathways associated with carbohydrate, nucleic acid, lipid and amino acid metabolism. The integration, regulation and origins of these metabolic systems are explored in the context of biotechnology and disease.

BIOL 5703. Exercise Physiology. 3 cr. hrs.
Study of the effects of acute and chronic exercise on selected organ systems. Particular emphasis is placed on muscle, cardiovascular, respiratory and environmental physiology.

BIOL 5806. Immunobiology. 3 cr. hrs.
Cellular and molecular mechanisms of the immune response. Nature of antigens and antibodies and their interactions. Special topics include complement, immediate and delayed hypersensitivity, transplantation and tumor immunobiology, immunosuppression, and immunological tolerance. 3 hrs. lec., disc.

BIOL 6001. Radioisotope Safety. 2 cr. hrs.
Ionizing radiation: proper safety procedures in the independent use of radioisotopes and current regulatory guidelines and licensing procedures. Prereq: BIOL 1002 and CHEM 1002; or BIOL 1009 and CHEM 1002; or cons. of dept. ch.

BIOL 6005. Scientific Writing Workshop. 1-3 cr. hrs.
Designed to teach basics of clear and effective scientific writing with emphasis on preparing and evaluating research manuscripts and proposals. Students learn editing techniques through deconstructing and revising others’ work. Prereq: Second year grad. student or cons. of instr.
BIOL 6011. Advanced Concepts in Genetics and Cell Biology. 3 cr. hrs.
Introduces students to genetics and cell biology at an advanced graduate level. Topics cover foundational and cutting edge science across a variety of topics, including: DNA and RNA structure, Mendelian genetics, transcription and translation, regulation of gene expression, DNA mutation and repair, genomics and proteomics, membrane structure and function, membrane transporters and channels, membrane potential, protein transport within the cell and cellular signaling.

BIOL 6012. Advanced Concepts in Cell Biology and Biochemistry. 3 cr. hrs.
Introduces students to cell biology and biochemistry at an advanced graduate level. Topics cover foundational and cutting edge science across a variety of topics, including: carbohydrate and protein structure, protein folding, protein-ligand interactions, enzyme function, bioenergetics, the cytoskeleton, molecular motors and membrane compartments.

BIOL 6096. Laboratory Rotations in Biology. 1-3 cr. hrs.
Informal lab rotation of first-year graduate students based on mutual preferences of the student and faculty member including lab group meetings, literature research, bench work, presentation of findings and/or research plan to lab members. S/U grade assessment. Prereq: Cons. of dept. ch.

BIOL 6097. Laboratory Research in Biology. 1-3 cr. hrs.
Independent research of second year graduate students based on their dissertation/thesis research laboratories, including lab group meetings, literature research, bench work and presentation of findings. S/U grade assessment. Prereq: BIOL 6096 and cons. of dept. ch.

BIOL 6401. Molecular Evolution. 2 cr. hrs.
Covers introductory topics in molecular evolution based on readings from the literature. Topics include: online sequence databases; sequence alignment; detecting natural selection; building phylogenetic trees; testing alternative phylogenetic hypotheses; molecular clocks; reconstructing ancestral sequences; and gene duplication and loss. Students learn to use several software packages to perform these analyses. Prereq: Cons. of instr.

BIOL 6952. Department Colloquium. 0 cr. hrs.
Scholarly reports on selected topics in modern biology by visiting and resident investigators and graduate students. Registration and attendance required of all full-time graduate students in biology. SNC/UNC grade assessment.

BIOL 6995. Independent Study in Biological Sciences. 1-3 cr. hrs.
Investigations in selected areas of biology. Prereq: Cons. of instr. and cons. of dept. ch.

BIOL 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

BIOL 8101. Protein Structure and Function. 2 cr. hrs.
Advanced protein biochemistry stressing methodology and primary literature. Topics include: structural and chemical properties of amino acids, peptides and proteins; protein folding and assembly; protein-protein and protein-ligand interactions; enzyme kinetics and regulation; and the determination of protein structure. Uses examples from glycolytic and gluconeogenic metabolic pathways to highlight the structural basis for catalysis and regulation. Prereq: BIOL 3101 or equiv.; or cons. of instr.

BIOL 8102. Biochemistry and Function of Nucleic Acids. 2 cr. hrs.
The biochemistry of RNA and DNA with emphasis on biological function and evolution. Specific topics include: nucleic acid structure, biophysical properties, biosynthesis, and molecular function. Prereq: BIOL 3101 or cons. of instr.

BIOL 8201. Epigenetics. 2 cr. hrs.
Focuses on the molecular biology of epigenetic gene expression states of eukaryotic model organisms and introduces molecular and genetic approaches to the analysis of epigenetic problems. In particular, the course addresses DNA methylation, RNA interference, chromatin structure, transposable elements and gene silencing.

BIOL 8202. Principles of Eukaryotic Genetics. 2 cr. hrs.
Genetics of eukaryotic model organisms with a focus on genetic approaches to the analysis of contemporary biological problems. Eukaryotic chromosome structure and function. Prereq: BIOL 3201 or equiv.

BIOL 8301. Imaging and Cytoskeletons. 2 cr. hrs.
Discusses the principles of cytoskeleton and molecular motors and modern imaging tools developed for the studies of cellular mechanisms. Prereq: BIOL 2301 or equiv.

BIOL 8302. Protein Trafficking and Organelle Identity in Eukaryotic Cells. 2 cr. hrs.
An in-depth analysis of protein trafficking and organelle identity in eukaryotic cells. Discusses, in detail, mechanisms of protein translocation across biological membranes and the genetic and biochemical analysis of protein sorting to diverse organelles. Prereq: BIOL 3301 or equiv.

BIOL 8501. Molecular and Cellular Signaling. 2 cr. hrs.
Comprehensive survey of the major neurotransmitter systems including biochemical synthesis and degradation, receptors and intracellular signaling pathways. Emphasizes modern laboratory techniques and primary literature. Prereq: Cons. of instr.

BIOL 8502. Systems Neuroscience. 2 cr. hrs.
Comprehensive survey of nervous system function at the systems level and includes motor, sensory and regulatory systems. Prereq: Cons. of instr.

BIOL 8504. Advanced Survey in Neuroscience. 1 cr. hr.
An introduction to current neuroscience literature with a focus on research at Marquette. Prereq: Cons. of instr.
Biological Sciences (BSCI)

BIOL 8506. Cellular Neurophysiology. 2 cr. hrs.
Biophysical properties of membranes and membrane-bound proteins. In-depth study of electrotonic properties of membranes, electrical potentials, voltage-dependent and ligand-dependent ion channels. Emphasizes techniques and data interpretation. Prereq: Cons. of instr.

BIOL 8520. Behavioral Neuroendocrinology. 2 cr. hrs.
Examines neuroendocrine systems as they relate to behavioral processes and their underlying neurobiological mechanisms with emphasis on the contribution of neuroendocrine dysfunction to neuropsychiatric disease. Prereq: Cons. of inst.

BIOL 8530. Glutamate Neurotransmission. 2 cr. hrs.
Reviews critical aspects of glutamatergic signaling including an overview of glutamate receptors, transporter, and release mechanisms. The contribution of abnormal glutamatergic neurotransmission is discussed in light of a number of pathological states including stroke and schizophrenia. Students integrate course material into a novel research proposal. Prereq: Cons. of inst.

BIOL 8501. Stem Cell Biology. 2 cr. hrs.
Examines fundamental principles of developmental biology as they relate to embryonic and adult stem cells. Includes: origin of stem cells, regulation of stem cell niches, pluripotency and differentiation, relationship to cancer and experimental approaches to stem cell research. Also includes discussion of recent advances in stem cell biology. Prereq: BIOL 2301 or equiv.; or BIOL 3601 or equiv.

BIOL 8603. Cell and Molecular Biology of Early Development. 2 cr. hrs.
Study of the cellular and molecular mechanisms underlying the specification of cell fate in a variety of model organisms including fruit flies, nematodes, mice and zebra fish. Emphasizes genetic, biochemical and molecular techniques used in studying these complex systems. Prereq: BIOL 3301 or equiv.; or BIOL 4601 or equiv.

BIOL 8702. Muscle Biology. 2 cr. hrs.
Topics covered include: skeletal, cardiac and smooth muscle relative to their regulation, structure and function. Emphasizes similarities and differences between these three muscle types with regard to structural organizations, composition, mechanics and kinetics. In addition, covers development, regulation and disease states. Emphasizes critical reading of primary scientific literature. Prereq: BIOL 3701 or equiv.

BIOL 8704. Cellular Homeostasis. 2 cr. hrs.
Detailed study of the proteins and pathways involved in the maintenance of cell volume, pH, and ionic balance, including the analysis of the function of plasma membrane transporter and channel proteins. The emphasis will be on eukaryotic cells, but prokaryotic cells will also be covered. Prereq: BIOL 2301 or equiv., or cons. of instr.

BIOL 8801. Prokaryotic Molecular Genetics. 2 cr. hrs.
Basic principles of bacterial genetics and regulation of gene expression. Points of emphasis: 1) how genetics and regulation shape and are shaped by the biology of the organism, 2) principles that are important to all biologists, including the manipulation of bacteria in genetic cloning and protein production, 3) application of genetics to elucidate cell physiology and biochemistry. Prereq: BIOL 3101 or BIOL 4801 or BIOL 8102 or an equiv. of any of these; or cons. of instr.

BIOL 8802. Microbiology in the Environment. 2 cr. hrs.
The detection of microbial diversity, activity, growth and abundance in the environment using molecular methods. Involves examples from literature. Prereq: BIOL 4801 or equiv. or cons. of instr.

BIOL 8803. Microbial Diversity and Ecology. 2-3 cr. hrs.
Study of microbial phylogenetic and physiological diversity underlying the ecological interactions in natural communities. Emphasizes quantitative molecular techniques and sequencing used in studying microbial communities in the environment. Develops critical thinking and writing skills in determining research objectives and testing hypotheses.

BIOL 8931. Topics in Biology. 1-3 cr. hrs.
Subject matter variable as determined by needs of biological sciences graduate students. Students may enroll more than once as subject matter changes. Prereq: Cons. of dept. ch.

BIOL 8953. Seminar in Biochemistry and Genetics. 1-3 cr. hrs.
Topics of current interest in biochemistry and genetics. Prereq: Cons. of instr.

BIOL 8954. Seminar in Plant Molecular Biology. 1-3 cr. hrs.
Topics of current interest in plant molecular biology. Prereq: Cons. of instr.

BIOL 8955. Seminar in Neuroscience. 1-3 cr. hrs.
Topics of current interest in neuroscience. Prereq: Cons. of instr.

BIOL 8956. Seminar in Cell and Developmental Biology. 1-3 cr. hrs.
Topics of current interest in cell and developmental biology. Prereq: Cons. of instr.

BIOL 8957. Seminar in Physiology. 1-3 cr. hrs.
Topics of current interest in physiology. Prereq: Cons. of instr.

BIOL 8958. Seminar in Ecology and Evolutionary Biology. 1 cr. hr.
Topics of current interest in Ecology and Evolutionary Biology are studied. Prereq: Cons. of instr.

BIOL 8995. Independent Study in Biological Sciences. 1-3 cr. hrs.
Investigations in selected areas of biology. Prereq: Cons. of instr. and cons. of dept. ch.
BIOL 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

BIOL 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIOL 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Chemistry (CHEM)

Chairperson: James Kincaid, Ph.D.
Chemistry website (https://www.marquette.edu/grad/programs-chemistry.php)

Degrees Offered
Master of Science, Doctor of Philosophy

Program Description
The Department of Chemistry offers outstanding research and educational opportunities in its graduate programs, leading to the master of science or doctoral degrees. The heart of the graduate degree is research, conducted in concert with a faculty mentor. The program requires 24 hours of course work, and students are advanced to Ph.D. candidacy after successfully completing a literature seminar (4th term) and research meeting (5th term). The program emphasizes development of the whole scientist.

Subspecialty areas of research within the Department of Chemistry include: photochemistry; molecular spectroscopy; medicinal chemistry and drug discovery; materials chemistry and nanotechnology; organometallic, physical organic, bioorganic, polymer, and theoretical chemistry; and chemical dynamics.

Prerequisites for Admission
Applicants should have graduated with, or be about to graduate with, a bachelor's degree from an accredited institution. The minimum prerequisite for any graduate course is one year of undergraduate physical chemistry. In addition, an undergraduate course in an area of study (e.g., analytical, inorganic, organic) appropriate to the graduate course involved is required. A student's undergraduate grade point should normally be equivalent to a B (3.000) or above.

Application Requirements
Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. An up-to-date Curriculum Vitae.
3. Copies of all college/university transcripts except Marquette.¹
4. Three letters of recommendation from individuals familiar with the applicant's academic work.
5. GRE scores (General Test is required; Subject Test is recommended).
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student's record.

General Information
For more detailed and comprehensive information about the master of science and doctoral programs in chemistry, students should consult the most recent edition of the Chemistry Department's Graduate Student Handbook. This publication defines the current rules and guidelines that govern department and program requirements.

Second Language Requirements
Normally, no reading knowledge of a second language is required in either the master's or doctoral programs. However, at the discretion of the student's thesis or dissertation committee, proficiency in a second language may be required if it is necessary in the student's research.

Proficiency Examinations
Incoming chemistry students must pass three proficiency examinations, which may be selected from among the four traditional areas of chemistry (analytical, inorganic, organic and physical chemistry). Incoming chemical physics students must pass proficiency examinations in physics, physical chemistry, and one other area of chemistry. These examinations can be repeated up to two times each, and the student must pass three by the end of his/her second term of full-time study or the equivalent.

Chemistry Master's Requirements

A program for the master's degree is determined by the student's research adviser in consultation with the student's thesis committee. All students are admitted to the program under Plan A but may transfer to Plan B if a Change of Plan form is submitted and approved.

In Plan A (research option), the student must complete 24 credit hours of course work and six credit hours of CHEM 6999 Master's Thesis for a total of 30 credit hours. Six credit hours of course work may be CHEM 6995 Independent Study in Chemistry. In addition, seminar course work (CHEM 6960 Departmental Seminar) is required for the program but earns no credit. The student must submit a thesis describing a substantial research project completed by the student in a mentor-professor's laboratory. Public defense of the thesis constitutes a comprehensive examination.

In Plan B (essay option), the student must complete 24 credit hours of course work and six credit hours of CHEM 6999 Master's Thesis for a total of 30 credit hours. An essay must also be submitted. Up to six credits of course work may be CHEM 6995 Independent Study in Chemistry. In addition, seminar course work (CHEM 6960 Departmental Seminar, CHEM 6953 Literature Seminar) is required for the program but earns no credit. The essay must include a review of the literature of some area of chemistry and a proposal of how knowledge in that area might be extended by research. Public defense of the essay constitutes a comprehensive examination.

Required course work - Choose 8 courses from the following:

<table>
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<tr>
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<td>Physical Chemistry 1</td>
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Seminar course work - Required each term

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<tr>
<td>CHEM 6960</td>
<td>Departmental Seminar</td>
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Seminar course work presented at Departmental Seminar

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<tbody>
<tr>
<td>CHEM 6953</td>
<td>Literature Seminar</td>
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Master's Thesis

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Total Credit Hours

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Accelerated Bachelor's-Master's Degree Program

The department offers a five-year combined bachelor's-master's program which enables students to earn both their bachelor of science and master of science degrees in chemistry in just five years. After completing the program, it is anticipated that students would have the potential for:

- Obtaining an industrial position in the chemical profession and related industries featuring greater responsibility and leadership than possible with a bachelor of science degree alone.
• Developing their academic skills and portfolio further, with the possibility to improve their chances of acceptance into doctoral, medical or other advanced degree programs.
• Immersion into an intensive research experience to provide guidance on their ability and aptitude for pursuing a doctor of philosophy degree in chemistry.

Students are admitted following their junior year but are encouraged to begin undergraduate research (CHEM 4956 Undergraduate Research in Chemistry) during their junior year. Normally, a GPA of 2.750 in their Marquette University undergraduate science and math course work is required for admission. During the spring term of their fourth year, students are eligible to apply for a graduate assistantship for the fifth year, which would be awarded, if available, on the basis of merit as determined by the Graduate Committee (GC). Note that priority for academic year graduate assistantships is given to doctoral candidates.

**Chemistry Doctoral Requirements**

**Specializations:** Analytical Chemistry, Bioanalytical Chemistry, Biophysical Chemistry, Chemical Physics, Inorganic Chemistry, Organic Chemistry, Physical Chemistry

A program for the doctoral degree is determined by the student’s research adviser in consultation with the student’s dissertation committee.

A doctoral student must complete a program of study defined on an approved Doctoral Program Planning Form. Normally, the student will be required to complete 24 credit hours of course work and 12 credit hours of CHEM 8999 Doctoral Dissertation for a total of 36 post-bachelor’s degree credit hours. An intense program of laboratory instruction and research to begin no later than the second term of study is also required. Six credit hours of course work may be CHEM 6995 Independent Study in Chemistry. In addition, seminar course work (CHEM 6960 Departmental Seminar, CHEM 6953 Literature Seminar, CHEM 8953 Research Seminar) is required for the program but earns no credit. A third year research meeting consisting of a written report and oral presentation constitutes a qualifying examination; in addition, advancement to doctoral candidacy is contingent upon maintaining a 3.000 grade point average at the end of the fourth term of study in at least 15 credit hours of formal (non-CHEM 6995) course work. The student must submit a dissertation describing a significant body of independent research carried out in concert with a faculty mentor. The dissertation must be of a caliber that would be publishable in the leading scientific journals. A public defense of the dissertation is required.

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### 12 credit hours of Doctoral Dissertation

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<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>CHEM 8999</td>
<td>Doctoral Dissertation</td>
</tr>
</tbody>
</table>

Seminar course work is required every term

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 6960</td>
<td>Departmental Seminar</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>CHEM 5130</td>
<td>Characterization of Organic Compounds.</td>
</tr>
<tr>
<td></td>
<td>Fundamentals theory of spectral methods used to</td>
</tr>
<tr>
<td></td>
<td>identify organic compounds. Structure elucidation</td>
</tr>
<tr>
<td></td>
<td>through application of nuclear magnetic resonance,</td>
</tr>
<tr>
<td></td>
<td>ultraviolet, infrared, and mass spectroscopy.</td>
</tr>
<tr>
<td></td>
<td>Lecture.</td>
</tr>
<tr>
<td>CHEM 5230</td>
<td>Forensic Chemistry.</td>
</tr>
<tr>
<td></td>
<td>Examines the chemistry of forensics. Topics</td>
</tr>
<tr>
<td></td>
<td>include: the science behind forensic analysis,</td>
</tr>
<tr>
<td></td>
<td>methods for data analysis and applications of</td>
</tr>
<tr>
<td></td>
<td>analytical methods in forensic science.</td>
</tr>
<tr>
<td>CHEM 5330</td>
<td>Inorganic Chemistry.</td>
</tr>
<tr>
<td></td>
<td>Structure and bonding as related to physical</td>
</tr>
<tr>
<td></td>
<td>and chemical properties; concepts relating to</td>
</tr>
<tr>
<td></td>
<td>mechanisms; metal complexes; organometallic</td>
</tr>
<tr>
<td></td>
<td>chemistry; molecular symmetry; catalysis; and</td>
</tr>
<tr>
<td></td>
<td>descriptive chemistry to demonstrate applications</td>
</tr>
<tr>
<td></td>
<td>of principles.</td>
</tr>
<tr>
<td>CHEM 5430</td>
<td>Introduction to Quantum Chemistry.</td>
</tr>
<tr>
<td></td>
<td>Elementary quantum theory and applications to</td>
</tr>
<tr>
<td></td>
<td>atoms, molecules, and chemical bonding.</td>
</tr>
<tr>
<td>CHEM 5431</td>
<td>Physical Chemistry: Fundamentals with Applications</td>
</tr>
<tr>
<td></td>
<td>in Biological Sciences.</td>
</tr>
<tr>
<td></td>
<td>Focuses on basic principles, using examples</td>
</tr>
<tr>
<td></td>
<td>drawn from applications to biological systems.</td>
</tr>
<tr>
<td></td>
<td>Covers macroscopic, statistical, and microscopic</td>
</tr>
<tr>
<td></td>
<td>descriptions of matter. Emphasis on</td>
</tr>
<tr>
<td></td>
<td>thermodynamics, chemical and physical</td>
</tr>
<tr>
<td></td>
<td>equilibria, transport properties, and</td>
</tr>
<tr>
<td></td>
<td>kinetics.</td>
</tr>
<tr>
<td>CHEM 5433</td>
<td>Physical Chemistry 1.</td>
</tr>
<tr>
<td></td>
<td>Foundations of quantum mechanics, applications</td>
</tr>
<tr>
<td></td>
<td>to chemical systems, atomic and molecular</td>
</tr>
<tr>
<td></td>
<td>structure and spectroscopy, foundations of</td>
</tr>
<tr>
<td></td>
<td>statistical mechanics, states of matter, laws</td>
</tr>
<tr>
<td></td>
<td>of thermodynamics, phase and chemical</td>
</tr>
<tr>
<td></td>
<td>equilibrium, electrochemistry, transport</td>
</tr>
<tr>
<td></td>
<td>properties and chemical kinetics.</td>
</tr>
<tr>
<td></td>
<td>Lect.</td>
</tr>
<tr>
<td>CHEM 5434</td>
<td>Physical Chemistry 2.</td>
</tr>
<tr>
<td></td>
<td>Continuation of CHEM 5433. Three hrs. lec.</td>
</tr>
<tr>
<td>CHEM 5530</td>
<td>Biochemistry 1: Macromolecular Structure and</td>
</tr>
<tr>
<td></td>
<td>Function.</td>
</tr>
<tr>
<td></td>
<td>Chemistry and biology of the component molecules</td>
</tr>
<tr>
<td></td>
<td>of living cells, with an emphasis on the</td>
</tr>
<tr>
<td></td>
<td>structure and function of proteins, nucleic</td>
</tr>
<tr>
<td></td>
<td>acids and biochemical cofactors. Underlying</td>
</tr>
<tr>
<td></td>
<td>principles include bonding, kinetics,</td>
</tr>
<tr>
<td></td>
<td>thermodynamics, biochemical transformations,</td>
</tr>
<tr>
<td></td>
<td>molecular recognition, protein folding,</td>
</tr>
<tr>
<td></td>
<td>enzyme catalysis, protein-nucleic acid</td>
</tr>
<tr>
<td></td>
<td>structure and function and evolution at the</td>
</tr>
<tr>
<td></td>
<td>biochemical level.</td>
</tr>
<tr>
<td>CHEM 5630</td>
<td>Introduction to Polymer Science.</td>
</tr>
<tr>
<td></td>
<td>Theory and practice of molecular weight</td>
</tr>
<tr>
<td></td>
<td>determination for macromolecules. Characterization</td>
</tr>
<tr>
<td></td>
<td>of polymers, including spectroscopic, chemical</td>
</tr>
<tr>
<td></td>
<td>and mechanical procedures. Synthesis of</td>
</tr>
<tr>
<td></td>
<td>polymers, including kinetics of reaction.</td>
</tr>
<tr>
<td></td>
<td>Polymer additives and technology.</td>
</tr>
<tr>
<td>CHEM 5932</td>
<td>Advanced Topics in Chemistry.</td>
</tr>
<tr>
<td></td>
<td>Advanced topics of current interest in</td>
</tr>
<tr>
<td></td>
<td>inorganic, organic, analytical, physical or</td>
</tr>
<tr>
<td></td>
<td>biochemistry.</td>
</tr>
<tr>
<td>CHEM 6101</td>
<td>Modern Concepts of Organic Chemistry.</td>
</tr>
<tr>
<td></td>
<td>Stereochemistry, structure-reactivity, and</td>
</tr>
<tr>
<td></td>
<td>linear free energy relationships. Chemistry of</td>
</tr>
<tr>
<td></td>
<td>reaction intermediates and mechanistic approaches</td>
</tr>
<tr>
<td></td>
<td>to problems. Offered fall term.</td>
</tr>
<tr>
<td>CHEM 6102</td>
<td>Organic Reactions.</td>
</tr>
<tr>
<td></td>
<td>Scope and limitations of modern techniques of</td>
</tr>
<tr>
<td></td>
<td>synthesis utilizing addition, elimination,</td>
</tr>
<tr>
<td></td>
<td>oxidation, reduction, substitution, rearrangement,</td>
</tr>
<tr>
<td></td>
<td>concerted reactions. Attention to mechanisms</td>
</tr>
<tr>
<td></td>
<td>and stereochemistry. Prereq: CHEM 6101.</td>
</tr>
<tr>
<td>CHEM 6103</td>
<td>Mechanisms of Organic Reactions.</td>
</tr>
<tr>
<td></td>
<td>Fundamental principles of physical organic</td>
</tr>
<tr>
<td></td>
<td>chemistry. Mechanisms of common organic reactions</td>
</tr>
<tr>
<td></td>
<td>with emphasis on polar mechanisms. Introduction</td>
</tr>
<tr>
<td></td>
<td>to Huckel and extended Huckel molecular orbital</td>
</tr>
<tr>
<td></td>
<td>calculations. Prereq: CHEM 6101.</td>
</tr>
<tr>
<td>CHEM 6201</td>
<td>Physical Methods of Analysis.</td>
</tr>
<tr>
<td></td>
<td>Review of equilibria, principles and practice</td>
</tr>
<tr>
<td></td>
<td>of spectrophotometry, electroanalysis and</td>
</tr>
<tr>
<td></td>
<td>separation methods.</td>
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<tr>
<td>CHEM 6202</td>
<td>Spectrochemical Methods of Analysis.</td>
</tr>
<tr>
<td></td>
<td>Discussion of modern instrumentation for</td>
</tr>
<tr>
<td></td>
<td>spectrochemical analysis including conventional</td>
</tr>
<tr>
<td></td>
<td>sources, lasers, monochromators and</td>
</tr>
<tr>
<td></td>
<td>detection systems. Review and comparison of</td>
</tr>
<tr>
<td></td>
<td>methods and applications of various spectro</td>
</tr>
<tr>
<td></td>
<td>chemical techniques for the analysis of atomic</td>
</tr>
<tr>
<td></td>
<td>and molecular species.</td>
</tr>
<tr>
<td>CHEM 6203</td>
<td>Electroanalytical Methods.</td>
</tr>
<tr>
<td></td>
<td>Electroanalytical methods for analysis and as a</td>
</tr>
<tr>
<td></td>
<td>probe of homogeneous and heterogeneous redox</td>
</tr>
<tr>
<td></td>
<td>processes with major emphasis on voltammetric,</td>
</tr>
<tr>
<td></td>
<td>coulometric, potentiostatic and potentiometric</td>
</tr>
<tr>
<td></td>
<td>methods. Also the redox chemistry of</td>
</tr>
<tr>
<td></td>
<td>important organic, inorganic and</td>
</tr>
<tr>
<td></td>
<td>organometallic compounds.</td>
</tr>
</tbody>
</table>
CHEM 6204. Analytical Separations. 3 cr. hrs.
Emphasis on gas chromatography and high performance liquid chromatography. Also included: other forms of chromatography, electroforesis and related techniques, distillation, extraction, dialysis.

CHEM 6301. Advanced Inorganic Chemistry 1. 3 cr. hrs.
Atomic and molecular structure, chemistry of the compounds of metals, transition metals and nonmetals, introduction to symmetry, ligand field theory, mechanisms, acids and bases, non-aqueous solvents, organometallic compounds, and applications of spectroscopy.

CHEM 6302. Advanced Inorganic Chemistry 2. 3 cr. hrs.
Special emphasis on such topics as non-aqueous solvents, mechanisms of inorganic reactions, inorganic polymers, descriptive chemistry, coordination chemistry, organometallic chemistry, point group classification, spectroscopy as applied to inorganic compounds, inorganic biochemistry, and current inorganic literature.

CHEM 6401. Computational Chemistry. 3 cr. hrs.
Survey of the theories, models, and methods of modern computational chemistry. Topics include: molecular mechanics, semiempirical and ab initio molecular orbital theory, and Density Functional theory. Emphasizes applications in vibrational and electronic spectroscopy, thermodynamics, reaction dynamics, and condensed phase phenomena. Prereq: CHEM 5434.

CHEM 6402. Introduction to Spectroscopy. 3 cr. hrs.

CHEM 6403. Statistical Thermodynamics. 3 cr. hrs.
Applications of statistical methods to chemical systems at equilibrium, including the calculations of thermodynamic functions, the properties of gases, and the theories of the liquid state. Introduction to non-equilibrium statistics and quantum statistics.

CHEM 6404. Chemical Kinetics. 3 cr. hrs.
Mathematical and phenomenological description of chemical rate processes and application to the solution of chemical problems.

CHEM 6405. Advanced Physical Chemistry. 3 cr. hrs.
Atomic and molecular structure and chemical bonding from the point of view of quantum mechanics; illustrations from spectroscopy.

CHEM 6406. Infrared and Raman Spectroscopy. 3 cr. hrs.
General theories of molecular vibrations and applications of infrared and Raman spectroscopy to chemical problems.

CHEM 6407. Advanced Quantum Chemistry. 3 cr. hrs.
The application of advanced topics and methods of quantum mechanics to chemistry. Prereq: CHEM 6405.

CHEM 6931. Topics in Chemistry. 1-3 cr. hrs.
Topics of current interest in biochemistry.

CHEM 6953. Literature Seminar. 0 cr. hrs.
Scholarly presentation on a current topic in chemistry. Mandatory for all CHEM graduate students. SNC/UNC grade assessment.

CHEM 6960. Departmental Seminar. 0 cr. hrs.
Papers and discussions as a means of interpreting present trends in chemical research. Required of all full-time graduate students in chemistry. SNC/UNC grade assessment.

CHEM 6995. Independent Study in Chemistry. 1-4 cr. hrs.
Prereq: Cons. of dept. ch.

CHEM 6999. Master’s Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

CHEM 8953. Research Seminar. 0 cr. hrs.
Scholarly presentation of student’s dissertation research topic in chemistry. Mandatory for all CHEM doctoral students. SNC/UNC grade assessment.

S/U grade assessment. Prereq: Cons. of dept. ch.

CHEM 9503. Competency Exam Prep: Less Than Half-Time. 0 cr. hrs.
A less than half-time equivalent course, used for those Marquette graduate students who are participating in undergraduate courses in preparation for graduate competency examinations. Prereq: Cons. of the Graduate School.

CHEM 9603. Competency Exam Prep: Less Than Half-Time. 0 cr. hrs.
A less than half-time equivalent course, used for those Marquette graduate students who are studying, whether in a classroom or independently, in preparation for graduate competency examinations. Prereq: Cons. of the Graduate School.

CHEM 970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CHEM 974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
CHEM 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CHEM 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CHEM 9994. Master’s Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CHEM 9995. Master’s Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CHEM 9996. Master’s Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CHEM 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CHEM 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CHEM 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Communication (COMM)

Acting Associate Dean for Graduate Studies and Research: Kati Tusinski Berg, Ph.D.
Graduate Communication website (https://www.marquette.edu/grad/programs-communication.php)

Degree Offered

Master of Arts

Program Description

The J. William and Mary Diederich College of Communication graduate program in communication prepares students for intellectual, artistic, professional and ethical leadership in a complex technological and multicultural world. It uses a core of common knowledge, values, and communication skills to improve understanding of communication as a cultural and social process and to develop the skills necessary for success in constantly changing information environments. Students can specialize in one of two areas: communication and media studies, or digital communication strategies. The master’s program takes an integrative approach that emphasizes how contemporary communication practices, technologies and professions intersect, and encourages students to learn from one another’s specialized interests.

The communication and media studies specialization focuses upon deeper skills of analysis and research in communication and prepares students for advanced roles in their careers or for doctoral studies. The digital communication strategies specialization focuses upon the planning and use of communication technologies and prepares students to work as leaders in their professional fields.

Students are encouraged to tailor the degree to their individual interests by choosing from the varied proseminars or topics courses offered in communication, or from courses offered in other Marquette graduate programs, including business, marketing, English, psychology and political science.

Both specializations require a problem-based, interdisciplinary, organizationally grounded fieldwork experience. Milwaukee offers a rich urban laboratory for communication study, with a wide array of advertising and public relations agencies, major corporations, consulting firms, broadcast stations, general interest and specialized newspapers and magazines, and online publications. The fieldwork credits allow students to gain experience and develop a professional portfolio, and to work collaboratively and learn from one another’s experiences as writers, designers, multimedia specialists, consultants, trainers and marketers.

Upon the completion of the master of arts degree program in communication, graduates will be able to:

1. Apply research-based, theory-informed knowledge to the identification and solution of real-life issues in the field.
2. Apply ethical decision-making skills in a variety of communication situations.
3. Integrate knowledge from the discipline of communication with the chosen specialization area.

Prerequisites for Admission

For all programs in communication, the applicant must have graduated with, or be about to graduate with, a bachelor’s degree from an accredited institution and must have an undergraduate grade point average equivalent to at least a 3.000 on a 4.000 scale. Master of arts applicants without sufficient academic or professional background will be required to take some undergraduate courses with no graduate credit to satisfy deficiencies.

Application Requirements

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.
3. Three letters of recommendation, specifically in letter format.
4. A brief statement of academic and professional goals.
5. (For M.A. applicants only) GRE scores (General Test only). Waived for Marquette graduates with a major from the College of Communication, with an overall GPA of 3.250 and a major GPA of 3.500. Waived for domestic students with an overall GPA of 3.500 or above.
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency. A minimum score of 600 on the paper-based version, 250 on the computer-based version, or 100 on the Internet-based version is required.

Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

Master of Arts in Corporate Communication

In addition to our master of arts in communication, the J. William and Mary Diederich College of Communication offers a master of arts in corporate communication in conjunction with the Graduate School of Management. This 30 credit-hour program combines advanced course work in
communication and business to prepare students for an executive-level communication role. For more information on the corporate communication master of arts and its related five-year accelerated degree program, see the Graduate School of Management Bulletin (http://bulletin.marquette.edu/schoolofmanagement/programs/corpcomm/).

Dual Programs of Study

M.A. in Communication and M.A. in Political Science
M.A. in Communication and M.A. in International Affairs

The J. William and Mary Diederich College of Communication, in conjunction with the Department of Political Science, offers a program of dual study leading to a master of arts degree in communication and a master of arts degree in political science or international affairs. Dual degree students are able to complete both degree programs in less time than if both degrees were pursued separately.

Students seeking admission into the dual degree program must submit to the Graduate School separate applications for admission to both programs, including two sets of required documentation, and must meet the admission requirements of each program. Acceptance into one program does not guarantee acceptance into the other. If a student is accepted into one program and not the other, the student can still choose to accept the admission offer from the first program but would not be considered a dual degree student. Because students are officially admitted into only one Marquette University graduate program at a time, applicants must indicate which program they intend to pursue and complete first, although once accepted for admission to both programs, students may take courses from both departments. Upon completion of the first program, the student will be officially admitted to the second program for completion of the remainder of the dual program.

Dual degree students count 9 credits of course work in each program toward the required course work credits of the other program. Thus, 9 of the 30 credits required for the thesis program, or 9 of the 36 credits required for the non-thesis program for the master of arts degree in communication will come from POSC courses, and 9 of the 30 credits required for the master of arts degree in political science or international affairs will come from COMM courses.

Communication Master's Requirements

Specializations: Communication and Media Studies, Digital Communication Strategies

Students are required to choose a specialization and have the option of completing a thesis program or a non-thesis program. All students are admitted to the thesis program (Plan A), but may transfer to the non-thesis program (Plan B) with the approval of the program director. Students must earn a grade point average of at least 3.000 with no grades below a C.

Thesis Program (Plan A)

Students must complete 24 credit hours of course work plus 6 credit hours of thesis work (a total of 30 credit hours). Students must also submit an approved thesis and are required to give an oral defense of their thesis.

Non-Thesis Program (Plan B)

All students are admitted to the thesis program (Plan A), but may transfer to the non-thesis program (Plan B) with the approval of the program director.

Non-thesis program students must complete 24 credit hours of course work, 3 credit hours of practicum and 3 credit hours of an approved professional project (a total of 30 credit hours).

Program Requirements

Thesis (Plan A) Requirements:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 6001</td>
<td>Communication Theory in Context</td>
<td>3</td>
</tr>
<tr>
<td>COMM 6002</td>
<td>Communication Research in Action</td>
<td>3</td>
</tr>
<tr>
<td>COMM 6250</td>
<td>Communication as Ethical Practice</td>
<td>3</td>
</tr>
<tr>
<td>Specialization courses (see details below)</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Elective 1, 2</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>COMM 6999</td>
<td>Master's Thesis</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

1. The elective may include any course at the 5000 level or above including communication professions and society proseminars and digital communication strategies courses. Students may also choose courses in other departments selected in consultation with advisers.

2. Students may choose to take COMM 6964 Communication Practicum for elective credit. COMM 6964 Communication Practicum may be repeated for up to 6 credits.
Non-Thesis (Plan B) Requirements:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 6001</td>
<td>Communication Theory in Context</td>
<td>3</td>
</tr>
<tr>
<td>COMM 6002</td>
<td>Communication Research in Action</td>
<td>3</td>
</tr>
<tr>
<td>COMM 6250</td>
<td>Communication as Ethical Practice</td>
<td>3</td>
</tr>
<tr>
<td>COMM 6964</td>
<td>Communication Practicum</td>
<td>3</td>
</tr>
<tr>
<td>Specialization courses (see details below)</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>COMM 6998</td>
<td>Professional Project in Communication</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours: 30

1. Electives may include any course at the 5000 level or above including communication professions and society prosemians and digital communication strategies courses. Students may also choose courses in other departments selected in consultation with advisers.

2. Students may choose to take COMM 6964 Communication Practicum for elective credit. COMM 6964 Communication Practicum may be repeated for up to 6 credits.

Specialization Details

Communication and Media Studies

This specialization provides students with the theoretical and methodological foundation needed for positions of intellectual leadership in communication professions or for doctoral studies. The prosemian format encourages students to discover their individual interests within a broad spectrum of communication concepts, theories and research methods.

The prosemians are organized under six important contemporary topics; their exact content and title vary depending upon term and instructor. Prosemians may be repeated under different titles.

To complete the communication professions and society specialization, students must choose 3 prosemians from the following list and one additional COMM course at the 6000 level. Each course has variable topics and may be repeated once.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 6953</td>
<td>Proseminar in Health, Science and Environment</td>
<td>3</td>
</tr>
<tr>
<td>COMM 6954</td>
<td>Proseminar in Media</td>
<td>3</td>
</tr>
<tr>
<td>COMM 6955</td>
<td>Proseminar in Organizations</td>
<td>3</td>
</tr>
<tr>
<td>COMM 6956</td>
<td>Proseminar in Public Life</td>
<td>3</td>
</tr>
<tr>
<td>COMM 6957</td>
<td>Proseminar in Relationships</td>
<td>3</td>
</tr>
<tr>
<td>COMM 6958</td>
<td>Proseminar in Technology</td>
<td>3</td>
</tr>
</tbody>
</table>

Digital Communication Strategies

This specialization provides students with the conceptual foundation and practical training they need to help organizations plan and execute effective digital communication strategies. Courses help students identify and plan communication strategy, develop digital content, and measure the effectiveness of communication messages within a variety of professional contexts, including advertising, public relations and journalism. Students may tailor their course selections to meet their professional needs and interests.

The digital communication strategies specialization offers topic-based courses that take an applied approach to the strategic use of digital communication technologies. Specific titles vary depending upon term and instructor and topics courses may be repeated under different titles.

To complete the digital communication strategies specialization, students choose 3 courses from the following list and one additional COMM course at the 6000 level. Each course has variable topics and may be repeated once.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 6810</td>
<td>Digital Communication Strategies for Content</td>
<td>3</td>
</tr>
<tr>
<td>COMM 6815</td>
<td>Digital Communication Strategies in Metrics</td>
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<td>COMM 6820</td>
<td>Digital Communication Strategies for Technologies</td>
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<td>COMM 6825</td>
<td>Digital Communication Strategies for Leadership</td>
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Accelerated Bachelor’s-Master’s Program

The accelerated degree program in the College of Communication allows Marquette University students to earn both a bachelor of arts degree with a major in digital media, advertising, communication studies, corporate communication, journalism, media studies, public relations or performing arts and a master of arts degree in communication in five years. Students complete 9-12 hours of approved graduate credit in communication during their senior undergraduate year that count as part of the undergraduate credit hour requirement.
Upon completion of the first term as a master's candidate, the student must petition the Graduate School to transfer the courses taken as an undergraduate to the master's degree. All remaining master's degree requirements may be completed during the subsequent summer, fall and spring terms.

Candidates for admission should have undergraduate junior status, have completed at least 3 upper-division communication courses and should have a major GPA of at least 3.500 and an overall GPA of at least 3.200. Candidates for admission should submit transcripts and three letters of recommendation, but need not submit GRE scores. Candidates for admission to this program should notify the associate dean for graduate studies and research of their intentions.

**Advertising Public Relations Courses**

**ADPR 5300. Emerging and Social Media in a Dynamic Marketplace. 3 cr. hrs.**
Examines the strategic uses, impact and implications of emerging and social media. Addresses the need to adapt to a digital, networked marketplace where change is the rule rather than the exception. Expands student knowledge of emerging and social media and their application to advertising and public relations challenges. Students use this knowledge to find more strategic and effective ways to communicate with clients, publics, target markets and other stakeholders.

**ADPR 5350. Social Media Analytics and Measurement. 3 cr. hrs.**
Focuses on social media analytics and measurement. Designed to train students to analyze metrics and maximize the digital success of brands. Using innovative examples and case studies, students focus on effectiveness and optimization while learning to apply analytic strategies and tools to build strong measurement competencies.

**ADPR 5500. Account Management in Advertising and Public Relations. 3 cr. hrs.**
Explores the fundamentals of account management for both agencies and clients, including for-profit brands and non-profit organizations. Students learn basic business practices as well as client and agency structures and functions. Topics covered range from project estimating and budgeting to time management, relationship building and sales. Agency reviews and supplier selection and management are also covered. The ethical aspects of account management are stressed.

**ADPR 5850. Digital Content Strategy. 3 cr. hrs.**
Create content that builds brand awareness, creates brand preference and expands the brand's reach by leveraging digital content. Provides tangible skills framed by digital strategy to deliver consistent, ongoing valuable content to consumers across multiple platforms.

**ADPR 5953. Seminar in Advertising and Public Relations. 1-3 cr. hrs.**
Specific subjects of seminars to be announced in the Schedule of Classes. Variable topics.

**Communication Studies Courses**

**CMST 5110. Family Communication. 3 cr. hrs.**
Introduces communication phenomena in the family setting. Examines how communication affects the development, maintenance and enhancement of family relations.

**CMST 5120. Gendered Communication. 3 cr. hrs.**
Examines the relationship between gender and communication. Includes discussion of verbal and nonverbal communication patterns of males and females, various explanations for these patterns, perceptions of gender differences and the implications these perceptions have for people in several contexts (public, interpersonal and organizational).

**CMST 5130. Communication and Urban Families. 3 cr. hrs.**
Investigates communication about urban families, the communication links between urban families and institutions and communication practices within urban families. Emphasizes the diversity among urban families as well as the stressors and strengths found in the urban context.

**CMST 5140. Intergenerational Communication. 3 cr. hrs.**
Focuses on communication theories and the role of communication in intergenerational interactions within a wide variety of contexts including: interpersonal, workplace, familial, health and mediated technology.

**CMST 5220. Communication Approaches to Training and Development. 3 cr. hrs.**
Emphasizes development of training sessions within organizations. Diagnostic methods for assessing needs and determining the utility of specific training are explored. Roles of consultant, in-house human resource trainer and liaison with subject matter experts are differentiated. Students develop training modules for communication skills training.

**CMST 5230. Managerial Communication. 3 cr. hrs.**
The communication relationship between managers and employees involves a set of circumstances not often found in everyday communication with friends and colleagues. The differences in power, knowledge, job description, and life experiences create many unique and challenging interactions. Takes an in-depth look at the circumstances which affect communication between managers and their employees as well as at a number of theories and strategies for improving communication in the workplace.

**CMST 5250. Leadership and Communication. 3 cr. hrs.**
Explores communication variables involved when leaders attempt to influence members to achieve a goal. Topics include: power, credibility, motivation, research on leader traits, styles and situations and current models of leadership such as transactional, transformational, charismatic, and functional approaches. The different leadership challenges posed by community and institutional settings are also explored.
CMST 5260. Communication Technologies in the Workplace. 3 cr. hrs.
Presents a historical and theoretical review of the impact of new communication technologies on organizations and their membership. Focuses on the organizational, social and communicative implications of new communication technologies across a broad range of contexts in the organizational setting, including: interpersonal, groups and teams, management and technological innovations. Special topics particularly relevant to new communication technologies include anonymity, privacy and surveillance, and technology apprehension.

CMST 5400. Cross-Cultural Communication. 3 cr. hrs.
Cross-cultural communication offers a comparison of communicative behavior phenomena across national cultures and examines the influence of national group identity on communicative practice among groups in the United States, Europe, Asia, Latin America, and Africa. Global in scope, with a social justice emphasis, this course addresses a dynamic and mobile world as it seeks to provide an analytical framework for dissecting and understanding issues of hegemony, equity, and conflict management in cross-cultural exchanges.

CMST 5410. Intercultural Communication. 3 cr. hrs.
Intercultural communication in the United States explores the dynamics of interpersonal interaction and obstacles to those interactions between U.S. co-cultures. Examines the impact of identity on intercultural relationships; as well as the interpersonal patterns of selected co-cultural groups within the United States with the aim of improving individual communication competency and cultural understanding.

CMST 5500. Health Communication. 3 cr. hrs.
Provides an introduction to the field of health communication. Examines the role of communication in health care with a focus on provider training and the provider-patient relationship. Theoretical models for developing effective health communication programs are discussed and applied within a variety of health care settings.

CMST 5600. Communication Consulting. 3 cr. hrs.
Introduction to communication consulting and the design implementation of communication audits for corporate and non-profit settings. Surveys various models of consulting. Learn to design and implement a communication audit that includes needs assessment, interpretation, and recommendations. Methods of audits include survey design, interviews and focus groups.

CMST 5810. Directing Speech Activities. 3 cr. hrs.
Theory and practice in the organization and management of co-curricular speech activities in high school and college.

CMST 5953. Seminar in Communication Studies. 1-3 cr. hrs.
Topics vary. Topics of seminar to be announced in the Schedule of Classes.

CMST 6200. Organizational Communication. 3 cr. hrs.
Explores historical, contemporary and ideological approaches to the study and practice of organizational communication. Topics include: organizational culture, workplace relationships, participation and decision-making, organizational change, organizational justice, and organizational communication consulting.

CMST 6600. Communication Consulting. 3 cr. hrs.
Designed to acquaint students with significant issues pertaining to the design, implementation and assessment of communication consulting projects. Students are introduced to communication consulting and the design and implementation of consulting in various settings and industries. Students learn how data is gathered, analyze real organizational communication data and use their knowledge to offer theory-grounded recommendations to a client. Addresses ethical issues connected with consulting work. Students work on their own and with a team to complete a consulting project for a client.

Communication Courses

COMM 5100. Mass Media and the American Family. 3 cr. hrs.
The impact of the mass media on family communication patterns, familial value structures, development of children, and orientation to news media. Examination of news, advertising, and entertainment content from educational, cultural and economic perspectives. Emphasis on empirical social science research which examines relationships between media and families.

COMM 5200. International Communication. 3 cr. hrs.
History of the comparison among present structures of national media systems and the role of journalism within them. Principles of international news flow, gatekeeping, impact of technology, and the relationship between developing countries. Exploration of various models of press-government relationships.

COMM 5300. Introduction to Survey Research in the Communications Media. 3 cr. hrs.
How to conduct and understand the results of political polls and other forms of sample surveys in the communications media. Includes a discussion of ethical considerations in survey research, an introduction to principles and techniques of sampling, questionnaire construction and interviewing, practice in data analysis and related reasoning, and the presentation of results for various audiences.

COMM 5330. Health, Science, and Environmental Communication. 3 cr. hrs.
Study of and practice in communication of health, science, environmental, and risk information with the public and other non-experts, especially through mass, specialized and new media. Includes overview of some current issues.

COMM 5330. Health, Science and Environmental Communication. 3 cr. hrs.
Study of and practice in communication of health, science, environmental, and risk information with the public and other non-experts, especially through mass, specialized and new media. Includes overview of some current issues.
COMM 5500. Race and Gender Issues in Mass Media. 3 cr. hrs.
Surveys the past and present relationship between women and racial and ethnic minorities in the United States and the mass media. Specifically, the issues of how women and people of color are portrayed in the news and entertainment media, the role of ownership, employment and access to the media institutions will be studied. Women's Studies elective.

COMM 5550. Media and the 'Other'. 3 cr. hrs.
Analysis of media created for and by a wide array of audiences, especially those outside of what is sometimes called 'mainstream' media. The ways in which social and cultural ideas of 'us' and 'other' are formed, reinforced, and sometimes challenged through the media lens are identified and debated. Students consider and identify the power of media to form and honor (or dishonor) identity and whether it is possible or desirable to produce media that are identity-neutral.

COMM 5600. Media Management. 3 cr. hrs.
Staffing, organization, economics, salaries, law, labor negotiations and community relations as involved in the mass media. Theoretical and practical approaches to the problems of management.

COMM 5650. Cultural Identity, Media and Religion. 3 cr. hrs.
Examines manifestations of religion in print and electronic news, advertising and public relations, the uses of media by religious groups, bias and prejudice about religion in the secular media, and bias about secularism in religious media. Deconstructs consumer and material culture, and offers a critique of cultural consumption based on philosophies embedded in world religions. Uses a variety of media in instruction.

COMM 5700. Media and Politics. 3 cr. hrs.
How the news media cover politics and how politicians deal with news coverage. Emphasizes recent presidential campaigns, with special attention to ethical issues, the impact of new media, campaign advertising and strategies used by politicians and journalists.

COMM 5750. Media, Technology and Culture. 3 cr. hrs.
Draws on books, films, television shows and other elements of popular culture to consider the historical and conceptual foundations of new media technologies and their impact on contemporary culture.

COMM 5953. Seminar in Communication. 1-3 cr. hrs.
Special topics of seminar to be announced in the Schedule of Classes. Variable topics.

COMM 6001. Communication Theory in Context. 3 cr. hrs.
An introduction to communication theory as both intellectual and professional practice, with special attention to how it applies to the study of organizations; media; health, science, and the environment; public life; technology; and relationships.

COMM 6002. Communication Research in Action. 3 cr. hrs.
Explores professional and scholarly applications of research methodologies related to issues and problems in the study of organizations; media; health, science, and the environment; public life; technology; and relationships.

COMM 6100. Qualitative Research Methods in Communication. 3 cr. hrs.
Study of theory-based qualitative research applied to professional and scholarly problems and the effective communication of research results. Based on the fundamentals of theory and research methods offered in COMM 6001 and COMM 6002. Prereq: COMM 6001 or equiv. and COMM 6002 or equiv.; or cons. of instr.

COMM 6150. Quantitative Research Methods in Communication. 3 cr. hrs.
Study of theory-based quantitative research applied to professional and scholarly problems and the effective communication of research results. Based on the fundamentals of theory and research methods offered in COMM 6001 and COMM 6002. Prereq: COMM 6001 or equiv. and COMM 6002 or equiv.; or cons. of instr.

COMM 6250. Communication as Ethical Practice. 3 cr. hrs.
Explores the role of ethics in professional and scholarly life. Students will learn ethical theories, how to analyze a communication related ethics problem, derive and answer a normative-question related to the problem and learn to critically analyze and evaluate texts from a variety of communicative settings.

COMM 6810. Digital Communication Strategies for Content. 3 cr. hrs.
Discusses strategies for creating and evaluating textual, audio, and video materials for different platforms and audiences. Focus varies; topics may include: digital content management, writing for the web, branding and social journalism. Course topics to be announced in the Schedule of Classes.

COMM 6815. Digital Communication Strategies in Metrics. 3 cr. hrs.
Explores methods used to measure the impacts and effectiveness of digital communication across a variety of audiences and platforms (text, audio, video, and web). Focus varies; topics may include: measurement, analytics, user experience and the integration of return on investment (ROI). Seminar topics to be announced in the Schedule of Classes.

COMM 6820. Digital Communication Strategies for Technologies. 3 cr. hrs.
Teaches the use of technology in digital communication in various forms, including but not limited to persuasion, history and entertainment. Includes hands-on practice in constructing multimedia messages and students learn the art of storytelling using print, visual and aural media. Focus varies; topics include the integration of multimedia and various technologies to enhance the interactivity of platforms. Seminar topics to be announced in the Schedule of Classes.
COMM 6825. Digital Communication Strategies for Leadership. 3 cr. hrs.
Focuses on the use of communication leadership theories to coordinate organizational practices in an era of widespread technology and new media use. Focus varies; topics may include: digital communication management, executive communication via digital communication, project management, legal and ethical issues posed by new technologies and reputation management. Seminar topics to be announced in the Schedule of Classes.

COMM 6850. The Craft of Digital Storytelling. 3 cr. hrs.
Introduces students to the use of technology in storytelling in various forms, including but not limited to persuasion, history, and entertainment. Includes hands-on practice in constructing multimedia messages, and students learn the art of storytelling using print, visual and aural media.

COMM 6900. Storytelling in Public Life. 3 cr. hrs.
Explores the basic narrative structure of storytelling and provides a theoretical basis for ways of gaining effectiveness, given who tells the story, who the intended audience is, the purpose of the story and the means for telling the story.

COMM 6931. Topics in Communication. 3 cr. hrs.
Directed individual/group investigation of a selected topic or problem in communication. May be taken more than once when topics vary. Prereq: COMM 6000 and COMM 6050; cons. of the associate dean for graduate studies.

COMM 6953. Proseminar in Health, Science and Environment. 3 cr. hrs.
Explores media and communication practices that shape public discussions of health, science and environmental issues. Focus varies; topics may include: managing risk and uncertainty, health communication, science and public policy and crisis communication. Seminar topics to be announced in the Schedule of Classes.

COMM 6954. Proseminar in Media. 3 cr. hrs.
Examines media as social, cultural, political and economic institutions. Focus varies; topics may include: the political economy of media, sports and media, the sociology of communication and media rituals. Seminar topics to be announced in the Schedule of Classes.

COMM 6955. Proseminar in Organizations. 3 cr. hrs.
Analyzes organizations and organizational practices from a variety of theoretical and applied perspectives. Focus varies; topics may include: organizational rhetoric, systems theory, strategic communication, crisis communication and corporate communication. Seminar topics to be announced in the Schedule of Classes.

COMM 6956. Proseminar in Public Life. 3 cr. hrs.
Analyzes the rhetorical and political practices that help sustain the public life of democratic societies. Focus varies; topics may include: persuasion and propaganda, free expression, rhetoric and civic life, and argument and public discourse. Seminar topics to be announced in the Schedule of Classes.

COMM 6957. Proseminar in Relationships. 3 cr. hrs.
Analyzes personal communication, focusing on the development of relationships and the interpretation of meaning in everyday personal interaction. Focus varies; topics may include: family communication, conflict, interpersonal communication, gender and communication and intercultural communication. Seminar topics to be announced in the Schedule of Classes.

COMM 6958. Proseminar in Technology. 3 cr. hrs.
Examines the role that communication technologies have played in creating new models of social order, reshaping the forms of political and economic power and transforming group identity and personal life. Focus varies; topics may include: the history of the Internet, the use of communication technology in organizations, digital media and the global order and technologies of surveillance. Seminar topics to be announced in the Schedule of Classes.

COMM 6961. Special Institute/Workshop/Project. 1-3 cr. hrs.

COMM 6964. Communication Practicum. 3 cr. hrs.
Course guided practical field experience. Students apply communication theories and perspectives while working within a chosen communication field. Possible sites include public relations firms, corporate communication departments, advertising agencies, media organizations, human resources departments, health communication departments and training and development organizations. Prereq: COMM 6001 and COMM 6002.

COMM 6995. Independent Study in Communication. 1-3 cr. hrs.
Prereq: Cons. of dept. ch.; cons. of the associate dean for graduate studies.

COMM 6997. Capstone in Digital Storytelling. 3 cr. hrs.
Students integrate what has been learned across previous courses and create a microsite devoted to a subject that is relevant to personal or career goals.

COMM 6998. Professional Project in Communication. 1-3 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch., COMM 6964; approved project proposal and cons. of the associate dean for graduate studies.

COMM 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.; approved thesis outline and cons. of the associate dean for graduate studies.

COMM 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of associate dean for graduate studies.

COMM 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of associate dean for graduate studies.
COMM 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of associate dean for graduate studies.

COMM 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of associate dean for graduate studies.

COMM 9977. Field Placement Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

COMM 9978. Field Placement Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

COMM 9979. Field Placement Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

COMM 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COMM 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COMM 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COMM 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of associate dean for graduate studies.

COMM 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of associate dean for graduate studies.

COMM 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of associate dean for graduate studies.

COMM 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of associate dean for graduate studies.

COMM 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of associate dean for graduate studies.

COMM 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of associate dean for graduate studies.

Corporate Communication Courses

CCOM 5700. Corporate Advocacy. 3 cr. hrs.
Apply concepts from corporate communication and rhetorical criticism to analyze how organizations use symbols to develop organizational culture, manage organizational impressions, manage crises, and advocate for particular positions. Builds ability to critically think about and analyze the persuasive messages of organizations. Prereq: CMST 6200 or cons. of graduate director.

CCOM 5750. Corporate Social Responsibility. 3 cr. hrs.
Analyzes the range of public debates about the social responsibilities of corporations. Key questions explored include the following: What sorts of public communication practices are commonly taken to hinder or promote corporate social responsibility? What are the ethical implications for the civic life of corporations' internal communication practices? How do corporations manage their ethical relations with communities, nongovernmental organizations and other stakeholders? What sorts of groups have historically participated in public controversies over corporate social responsibility? Prereq: CMST 6200 or cons. of prog. dir.

CCOM 6300. Financial Communication and Investor Relations. 3 cr. hrs.
Examines the intersection of corporate communication theory, financial markets and investor relations. Prepares students to analyze flow of investment in corporate strategy from a communication perspective. Discussions focus on understanding financial markets, investors, creditors and other stakeholders. Focuses on assessing communication needs relative to finance and investors and developing effective communication strategies. Topics include: communication of shareholder value, the role of the IR professional, corporate governance, shareholder activism and regulation of financial communication and investor relations.

CCOM 6700. Corporate Advocacy. 3 cr. hrs.
Provides the opportunity to analyze how organizations use symbols to develop and maintain organizational culture, manage organizational impressions, manage crises and advocate for particular positions using a combination of concepts from organizational communication, rhetorical criticism and public relations. Designed to build abilities to critically think about and analyze the persuasive messages of organizations. Explores roles, uses and theories of rhetoric in organizational life. By learning how to analyze examples of organizational advocacy, students are better prepared to responsibly and effectively create those messages.
CCOM 6750. Corporate Social Responsibility. 3 cr. hrs.
Explores the key concepts, issues and challenges of corporate social responsibility (CSR) as a growing field of organizational study as well as corporate communication. Building upon the management literature, it explores theories of CSR with a strategic and process-oriented approach, then examines the discourse and practices of companies engaged in CSR efforts.

Digital Courses

DGMD 5260. Documentary Production. 3 cr. hrs.
Students create documentary digital media projects that employ non-fiction story structure and advanced techniques of shooting and editing, including hand-held and stationary camera, audio and microphone techniques and field lighting. Learn documentary theory and history, and also master project research, development, production and editing techniques. By developing individual voice and storytelling techniques, students create original, meaningful non-fiction works.

DGMD 5345. Advanced Scriptwriting. 3 cr. hrs.
Development and writing of scripts for television and/or feature films. Includes development of concepts for new television series, miniseries and movies for television, and study of their specific writing requirements, as well as writing for current television series. Writing workshop approach.

DGMD 5450. News and Information Gathering. 3 cr. hrs.
Analysis of the community with a view to the problems and opportunities for the broadcast media on the political, public, administrative, financial and commercial, labor, social welfare, and educational affairs of the community.

DGMD 5800. Digital Media Law and Policy. 3 cr. hrs.
Focuses on contemporary problems in media law and policy. Emphasis is placed on the Internet, mobile and social media, broadcasting, broadband and emerging technologies and on the most current legal and policy controversies and debates affecting those media. Students debate and seek to resolve law and policy problems while also studying and critiquing policymaking processes.

DGMD 5810. Radio and Television History. 3 cr. hrs.
Historical, cultural and commercial growth of American radio and television, with special emphasis on programming, from pre-network origins to the present. Covers key genres, persons, issues, trends and developments.

DGMD 5850. Television Criticism. 3 cr. hrs.
Stimulating serious thought about television as a societal force. Examines the major critical approaches that have historically been applied to television programming. Studies major television scholars whose work appears in academic publications and the mass media.

DGMD 5931. Topics in Digital Media. 1-3 cr. hrs.
Various topics to be announced in the Schedule of Classes. Includes extensive screening and/or other activities. Lecture/lab format.

Journalism Courses

JOUR 5160. Writing Literary Journalism. 3 cr. hrs.
Emphasizes long-form journalism, stresses strong reporting, immersion in a single subject over the course of a term, in-depth interviews and detailed observation. Students work individually, turning in portions of their work weekly. Publish a long-form article as the final project.

JOUR 5200. Publications Editing. 3 cr. hrs.
Editing principles and practices for print and online news publications. Editing copy, photos, charts and graphs; verification of information; writing headlines and captions. News judgment, wire services, backpack journalism, digital newsroom; digital production software.

JOUR 5510. Magazine Design and Production. 3 cr. hrs.
Fundamentals of magazine design and production. Develop understanding of basic elements of publication design and critical skills through analysis of various design problems. Prereq: Computer workshop or demonstrated proficiency on the Macintosh computer with current design software.

JOUR 5600. Journalism History. 3 cr. hrs.
The origin and development of Journalism in the United States considered in relation to American political, social and economic history. Consideration of newspapers, magazines, the electronic media, and important figures within each field. Prereq: Jr. stndg.

Covers strategies and methods for advising yearbooks, newspapers, online news and features in the context of scholastic journalism and for teaching journalism. Includes developing student staff; planning, production and assessment of scholastic publications and online products; evaluation of journalism texts for secondary level; working with faculty, school administrators, school boards, parents; budgeting; advertising sales; using desktop publishing and current software.

JOUR 5932. Advanced Topics in Journalism. 3 cr. hrs.
Advanced reporting and producing of news stories on a single topic that varies by semester.

JOUR 5953. Seminar in Journalism. 1-3 cr. hrs.
Specific subjects of seminars to be announced in the Schedule of Classes. Variable topics.
Theatre Arts Courses

THAR 5020. History of Theatre. 3 cr. hrs.
A chronological survey of theatre history from its origins to 1914. Particular emphasis paid to major periods of theatrical achievement, studying conjectural and documented styles in acting, design and production methods.

THAR 5210. Contemporary Theatre. 3 cr. hrs.
A survey of 20th century theatre practice from modern European theories of the late 19th century through Postmodernism. Special attention given to innovative aspects, such as surrealism and expressionism, epic theatre, the absurd movement, multi-media presentations, environmental theatre and multi-media presentations.

THAR 5220. History of Clothing 1: From Ancient Greece to the Reign of Terror. 3 cr. hrs.
An overview of the history of clothing and fashion in Western civilization from 2900 BC through the end of the 18th century, as well as some of the socio-economic and political factors that shaped these styles. The evolution of dress as a result of artistic and cultural change, as well as changes in geographic exploration and trade are covered in a lecture/discussion format. Clothing and fashion are examined as social history and personal statements of status and power.

THAR 5230. History of Clothing 2: From Jane Austen to Austin Powers. 3 cr. hrs.
An overview of the history of clothing and fashion in Europe and North America from the French Revolution through the 'Velvet Revolution,' as well as some of the socioeconomic and political factors that shaped these styles. The evolution of dress as a result of artistic and cultural influence, as well as advances in technology are covered in a lecture/discussion format. Clothing and fashion are examined as social history and personal statements of status and individuality.

THAR 5240. Period Styles. 3 cr. hrs.
Period movements as they relate to period clothing, decorative arts, architecture, music, etc., as they relate to different styles of theatrical performance and apply to actors, directors and designers.

THAR 5320. Crafts for the Theatre. 3 cr. hrs.
A techniques course that encompasses traditional and new materials which may be used in special projects often encountered in the creation of props and costumes. Includes casting and molding, thermoplastics, mask making, foam carving, jewelry, armor, etc.

THAR 5340. Advanced Costume Technique. 3 cr. hrs.
Covers advanced methods of costuming such as beginning pattern drafting, basic tailoring techniques, fabric modification through dyeing and painting, millinery, and costume crafts construction.

THAR 5360. Theatre Management. 3 cr. hrs.
Study and practice of theatre management and publicity. Lab requirement in production and/or stage management.

THAR 5400. Costume Design. 3 cr. hrs.
Study of the aesthetic and practical application of costume design and how it relates to the theatrical production process. Includes research, script analysis and costume renderings for in-class projects.

THAR 5420. Lighting Design. 3 cr. hrs.
The study and practice of theatrical lighting script analysis, research and planning techniques. Culminates in a realized collaboration.

THAR 5440. Scenery Design. 3 cr. hrs.
Study of the principles and practices of designing scenery for the stage.

THAR 5500. Advanced Play Direction. 3 cr. hrs.
The study of stage directing techniques, as well as, theories and methods of directing preferred by well-known theatrical directors of the last three decades. Building upon the fundamentals of direction learned in THAR 2500, students acquire a broader knowledge base of different stage directing approaches, philosophies and methodologies. Opportunity to test principles in assigned laboratory productions and to collaborate with a student designer from THAR 4420, Lighting Design in a final One Act presentation.

THAR 5600. Playwriting. 3 cr. hrs.
Study of the structure and execution of dramatic scripts for theatre. Assignments to write and analyze scenes and one-act plays.
Computational Mathematical and Statistical Sciences (CMPS)

Chairperson: Rebecca L. Sanders, Ph.D.
Program Director: Daniel B. Rowe, Ph.D.

Computational Sciences website (https://www.marquette.edu/grad/programs-computational-sciences.php)

Degrees Offered

Master of Science, students are admitted under Plan B (non-thesis option) but Plan A (thesis option) is also offered; Doctor of Philosophy

Program Description

Computational mathematical and statistical sciences (CMPS) is a field of study that emphasizes the discovery, implementation and use of computational tools to solve problems in mathematics and statistics that are both applied and pure. The master's degree program accommodates students whose objectives are either the master's degree or the preparation for doctoral study. The doctoral program is designed for individuals of outstanding ability who show promise as researchers in an interdisciplinary environment.

The diverse research opportunities in our graduate program are enhanced by the research faculty around Marquette’s campus in the sciences and engineering and by the Milwaukee area research laboratories and clinics. Consult the Department of Mathematical and Statistical Sciences website for the most current information.

Prerequisites for Admission

Admission to the master's program in computational mathematical and statistical sciences requires an undergraduate degree in mathematics, statistics or a related field such as computer science, engineering or an area of science, with at least a minor (3 courses beyond a full calculus sequence) in mathematics and proficiency in a high-level computer language.

Admission to the doctoral program in computational mathematical and statistical sciences requires (in addition to the prerequisites for master's admission) demonstrated promise for original research.

Application Deadline

To be considered for fall admission, all application requirements must be completed and received in the Graduate School. The priority deadline for review of applications is Jan. 15 for both the master's and doctoral programs. After the priority deadline, applications will be reviewed on a rolling basis.

Application Requirements

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.
3. Three letters of recommendation addressing the applicant's academic qualifications for graduate study in the intended program.
4. (For doctoral and all international applicants) GRE scores (General Test only).
5. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.
6. (For doctoral applicants only) English-language publications authored by the applicant, including a master's thesis or essay, if applicable (optional, but strongly recommended).

Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student's record.

Computational Mathematical and Statistical Sciences Master's Requirements

A master's student must complete a plan of study prepared in cooperation with an adviser and approved by the Graduate Committee of the Department of Mathematical and Statistical Sciences.

A master's student is admitted to the non-thesis program (Plan B). A formal request to pursue a thesis (Plan A) must be approved by the department's Graduate Committee and the Graduate School.

Thesis Option (Plan A)

All Plan A computational mathematical and statistical sciences master's students must complete a minimum of 24 credit hours of course work (which includes an 18-credit hour core and 6 credit hours of approved electives) and 6 thesis credit hours, and submit a thesis that must be an original contribution to the student's field of study. A public defense of the thesis is required.
### Required 18-credit hour core:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSSC 6010</td>
<td>Computational Probability</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6020</td>
<td>Statistical Simulation</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6030</td>
<td>Applied Mathematical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6040</td>
<td>Applied Linear Algebra</td>
<td>3</td>
</tr>
</tbody>
</table>

Choose two of the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COSC 6050</td>
<td>Elements of Software Development</td>
<td></td>
</tr>
<tr>
<td>COSC 6060</td>
<td>Parallel and Distributed Systems</td>
<td></td>
</tr>
<tr>
<td>MSSC 6931</td>
<td>Topics in Mathematical or Statistical Sciences (Topic: Scientific Computing)</td>
<td></td>
</tr>
</tbody>
</table>

Approved elective courses, which may include only 1 credit of MSSC 6090

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSSC 6999</td>
<td>Master's Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>

Total Credit Hours

<table>
<thead>
<tr>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
</tr>
</tbody>
</table>

### Essay Option (Plan B)

All Plan B computational mathematical and statistical sciences master's students must complete a minimum of 30 credit hours of course work (which includes the 18-credit hour core), and submit a non-credit essay that reflects the student's ability to synthesize source materials relating to a particular area of research or professional practice. A public oral presentation of the essay is required.

Required 18-credit hour core:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
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<td>Applied Mathematical Analysis</td>
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</tr>
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</table>

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<tbody>
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Approved elective courses, which may include only 1 credit of MSSC 6090

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Total Credit Hours

<table>
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<tr>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
</tr>
</tbody>
</table>

### Computational Mathematical and Statistical Sciences Doctoral Requirements

A doctoral student in computational mathematical and statistical sciences must first complete a plan of study, designed to see the student through completion of the comprehensive examination. This plan of study should be prepared in cooperation with an adviser and approved by the Graduate Committee of the Department of Mathematical and Statistical Sciences.

Upon completion of the comprehensive examination, a doctoral student must then complete a program of study designed to see the student through completion of the program. This program of study should be defined, in cooperation with an adviser, on a Doctoral Program Planning Form and approved by the department's Graduate Committee.

The total 57-credit program includes a minimum of 45 credit hours of approved course work beyond the bachelor's degree plus 12 dissertation credits. Students must complete:

- the 18-credit hour core.
- at least 2 credit hours of MSSC 6090 Research Methods/Professional Development.
- at least 25 credit hours of electives. Approved programs of study normally include 6 credits of courses outside the department and no more than 12 credit hours in courses at the 5000 level.
- the 12 credit hours of MSSC 8999 Doctoral Dissertation.

Advancement to candidacy for the doctoral degree is considered after successful completion of the comprehensive examination, completion of all course work specified in the Doctoral Program Planning Form and successful completion of the qualifying examination, conducted by the student's doctoral committee. Typically, the doctoral committee also serves as the dissertation committee.

A full-time doctoral student is expected to complete the core courses within the first two years of study, and to take the comprehensive examination at the first opportunity after their completion. A student who enters the program with the necessary core courses is expected to take the comprehensive exam at the first available time it is offered.

Required 18-credit hour core

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSSC 6090</td>
<td>Research Methods/Professional Development (1 credit, taken at least twice)</td>
<td>2</td>
</tr>
</tbody>
</table>
MSSC 6010  Computational Probability 3
MSSC 6020  Statistical Simulation 3
MSSC 6030  Applied Mathematical Analysis 3
MSSC 6040  Applied Linear Algebra 3
Choose two of the following courses: 6
COSC 6050  Elements of Software Development
COSC 6060  Parallel and Distributed Systems
MSSC 6931  Topics in Mathematical or Statistical Sciences (Topic: Scientific Computing)
Approved Elective courses (no more than 12 credits at the 5000 level) 25
Doctoral Dissertation/Research
MSSC 8999  Doctoral Dissertation 12
Total Credit Hours 57

Courses

MSSC 5020. The Teaching of Mathematics. 3 cr. hrs.
Historical background, problems, curricular materials, and teaching procedures in the various areas of mathematics pertinent to the needs of a secondary school mathematics teacher. In addition, a three-hour time block on one day each week between 8 a.m. and 3 p.m. must be kept free for clinical experience.

MSSC 5030. Concepts in Geometry and Calculus from an Advanced Standpoint. 3 cr. hrs.
Topics chosen primarily from geometry and calculus, taught from an advanced standpoint to enrich and deepen the student's understanding. Emphasis on alternative approaches, generalizations, historical contexts and connections with prior mathematical studies.

MSSC 5040. Concepts in High School Algebra and Number Theory from an Advanced Standpoint. 3 cr. hrs.
Topics closely related to the high school mathematics curriculum, chosen primarily from algebra and number theory, taught from an advanced standpoint to enrich and deepen the student's understanding. Emphasis on alternative approaches, generalizations, historical contexts and connections with prior mathematical studies.

MSSC 5120. Abstract Algebra 1. 3 cr. hrs.
Sets, mappings, operations on sets, relations and partitions. A postulational approach to algebraic systems including semigroups, groups, rings and fields. Homomorphisms of groups and rings, number systems, polynomial rings.

MSSC 5121. Abstract Algebra 2. 3 cr. hrs.
A continuation of MSSC 5120 with emphasis on groups, rings, fields and modules.

MSSC 5200. Intermediate Analysis 1. 3 cr. hrs.
Limits and continuity, differentiability, Riemann integration. Topology of N-dimensional spaces.

MSSC 5201. Intermediate Analysis 2. 3 cr. hrs.
Transformations of N-spaces, line and surface integrals, sequences and series, uniform convergence.

MSSC 5210. Complex Variables. 3 cr. hrs.
Complex numbers, analytic functions, differentiation, series expansion, line integrals, singularities and residues.

MSSC 5310. History of Mathematical Ideas. 3 cr. hrs.
Topics selected from the following: development of the number system (need for irrational and complex numbers); development of geometry including the effects of the discovery of non-Euclidean geometry; limit concept; need for axiomatic structures; twentieth-century problems. Current mathematics research and place of mathematics in today's world.

MSSC 5320. Theory of Numbers. 3 cr. hrs.
Integers, unique factorization theorems, arithmetic functions, theory of congruences, quadratic residues, partition theory.

MSSC 5420. Foundations of Geometry. 3 cr. hrs.
Modern postulational development of Euclidean and non-Euclidean geometries.

MSSC 5450. Topology. 3 cr. hrs.
Topological spaces, mappings, metric spaces, product and quotient spaces. Separation axioms, compactness, local compactness and connectedness.

MSSC 5500. Theory of Differential Equations. 3 cr. hrs.
Existence and uniqueness theorems, linear and non-linear systems, numerical techniques, stability.

MSSC 5510. Elementary Partial Differential Equations. 3 cr. hrs.
Fourier series, method of separation of variables, eigenfunction expansions, application of eigenfunctions to partial differential equations, Green's functions and transform methods.

MSSC 5540. Numerical Analysis. 3 cr. hrs.
Numerical solution of algebraic and transcendental equations, linear systems and the algebraic eigenvalue problem, interpolation and approximation, numerical integration, difference equations, numerical solution of differential equations and finite difference methods.
MSSC 5630. Mathematical Modeling and Analysis. 3 cr. hrs.
Construction and analysis of mathematical models from biological, behavioral and physical sciences.

MSSC 5650. Theory of Optimization. 3 cr. hrs.
Fundamental theorems describing the solution of linear programs and matrix games. Minimax, duality, saddle point property, simplex and specialized algorithms. Zero sum games, transportation and assignment problems, applications to economics.

MSSC 5670. Applied Combinatorial Mathematics. 3 cr. hrs.
Permutations and combinations, recurrence relations, inclusions and exclusion, Polya's theory of counting, graph theory, transport networks, matching theory.

MSSC 5700. Theory of Probability. 3 cr. hrs.
Random variables, distributions, moment generating functions of random variables, various derived probabilistic models and applications.

MSSC 5710. Mathematical Statistics. 3 cr. hrs.
Sampling theory and distributions, estimation and hypothesis testing, regression, correlation, analysis of variance, non-parametric methods, Bayesian statistics.

MSSC 5720. Statistical Methods. 3 cr. hrs.
Probability, discrete and continuous distributions. Treatment of data, point and interval estimation, hypothesis testing. Large and small sample method, regression, non-parametric methods. An introduction to the basic understanding of statistical methods. Applications-oriented.

MSSC 5740. Biostatistical Methods and Models. 3 cr. hrs.
Introduction to the statistics of life science and the use of mathematical models in biology. Data analysis and presentation, regression, analysis of variance, correlation, parameter estimation and curve fitting. Biological sequence analysis, discrete and continuous mathematical models and simulation.

MSSC 5760. Time Series Analysis. 3 cr. hrs.

MSSC 5780. Regression Analysis. 3 cr. hrs.
Basic concepts of statistical inference, simple linear regression, multiple linear regression, diagnostic analysis, selecting the best equation, stepwise methods, nonlinear regression, use of statistical software.

MSSC 5931. Topics in Mathematical or Statistical Sciences. 1-3 cr. hrs.
Topics selected from one of the various branches of mathematics or statistics. Specific topics to be announced in the Schedule of Classes.

MSSC 6010. Computational Probability. 3 cr. hrs.
Foundations of probability for modeling random processes and Bayesian approaches, including: counting techniques, probability of events, random variables, distribution functions, probability functions, probability density functions, expectation, moments, moment generating functions, special discrete and continuous distributions, sampling distributions, prior and posterior distributions, Law of Large Numbers, Central Limit Theorem, Bayesian paradigm. Prereq: Three semesters of mathematics beyond calculus and MATH 4720 or equiv.

MSSC 6020. Statistical Simulation. 3 cr. hrs.

MSSC 6030. Applied Mathematical Analysis. 3 cr. hrs.
Foundational topics in analysis considered from a modeling and numerical viewpoint. Emphasizes techniques of proof and approximation, and their role in the solution of problems arising in applications. Prereq: Multivariable calculus and linear algebra.

MSSC 6040. Applied Linear Algebra. 3 cr. hrs.
Foundational linear algebra considered from a numerical viewpoint. Focuses on solutions of linear systems of equations, eigenvalues and eigenvectors, and transformations. Emphasizes and illustrates proof and numerical implementation using problems arising in applications. Prereq: Multivariable calculus and linear algebra.

MSSC 6090. Research Methods/Professional Development. 1 cr. hr.
Designed to introduce the process of research and communication of research in the mathematical and statistical sciences, including presentation and publication of research, preparation of grant proposals, and ethical considerations. May be repeated.

MSSC 6110. Applied Discrete Mathematics. 3 cr. hrs.
Applied discrete mathematics for the mathematics, engineering and computer science graduate student. Emphasis on graph theory and counting problems that serve as a foundation for research areas in the second term. Theory and applications are covered for topics including trees, graph coloring, chromatic polynomials, generating functions, recurrence relations, distinct colorings and Polya's Theorem. Prereq: COSC 1020 and MATH 1450 or equiv.; MATH 1451 and MATH 2100 or equiv.

MSSC 6120. Optimization. 3 cr. hrs.
MSSC 6130. Dynamical Systems. 3 cr. hrs.
Theory of discrete and continuous dynamical systems. Periodic solutions, bifurcations, chaotic systems, attractors, fractal dimension and simulation of these systems. Prereq: MATH 4200 or equiv.

MSSC 6210. Theory of Statistics. 3 cr. hrs.
Brief review of sampling distributions, Central Limit Theorem and Law of Large Numbers. Estimation, testing hypotheses, regression and correlation analysis, non-parametric methods. Prereq: MATH 4720 or equiv.

MSSC 6220. Analysis of Variance and Covariance. 3 cr. hrs.

MSSC 6230. Multivariate Statistical Analysis. 3 cr. hrs.
Basic properties of random vectors, multivariate normal distribution, estimations of mean vector and covariance matrix, Wishart distribution, hypothesis testing, Hotelling's $T^2$, multivariate analysis of variance, principal component analysis, factor analysis, canonical correlation analysis, classification and discriminant analysis. Prereq: MATH 3100 and MATH 4710.

MSSC 6240. Design and Analysis of Scientific Experiments. 3 cr. hrs.
Single factor, two-factor and multi-factor designs and their analysis, Latin-square design and its analysis; power analysis and sample size selection; $2^k$ factorial designs; confounding/blocking designs; orthogonality and orthogonal contrasts; $3^k$ factorial designs; response surface methodology. Prereq: A course in statistical methods, such as MATH 4720 or equiv.

MSSC 6250. Statistical Machine Learning. 3 cr. hrs.
Multivariate data and exploratory analysis, random vector and multivariate normal distribution, multivariate linear regression, principal component and other dimensional reduction techniques, linear discriminant analysis, recursive partition and tree-based methods including classification tree and regression tree, cluster analysis, neural network and support vector machine. Prereq: A course in statistical methods, such as MATH 4720, and a course in linear algebra, such as MATH 3100, MATH 4780 or equiv., cons. of instr.

MSSC 6410. Real Analysis. 3 cr. hrs.
Involves study of algebraic structures of real analysis, function spaces, introduction to linear operators, measure and integration theory, convergence theorems, limits, continuity and derivatives. Prereq: MATH 4200.

MSSC 6420. Algebra. 3 cr. hrs.
Studies groups, rings, fields and vector spaces including Sylow's theorems, field of quotients of an integral domain, structure of finitely generated modules over a principal ideal domain, Galois theory of equations, ordered fields and classical groups. Prereq: MATH 4120 or equiv.

MSSC 6430. Logic and Set Theory. 3 cr. hrs.
Naïve set theory, first-order logic, elementary model theory, non-standard analysis, Gödel's incompleteness theorems for elementary arithmetic, axioms for set theory, ordinal and cardinal arithmetic, the continuum hypothesis, methods of inner models and forcing for proving consistency and independence results. Prereq: MATH 4120 or equiv.

MSSC 6440. Topology. 3 cr. hrs.
Metric spaces, fundamental topology notions, subspace topology, product spaces, quotient spaces, separation axioms, Tietze's theorem, compactness, metrization, uniform spaces, function spaces, homotopy relation, fundamental group, computing manifold groups. Prereq: MATH 4200 or equiv.

MSSC 6770. Innovations in Secondary Mathematics: Meeting the NCTM Standards. 3 cr. hrs.
Online course designed for teachers of secondary mathematics. Emphasizes relevant NCTM standards through discussion, projects, and implementation in a secondary mathematics classroom. Mathematics content amplifies and extends selected topics of secondary mathematics. Topics vary. Credit may be earned multiple times if completed under a different topic. Prereq: Cons. of dept. ch.; one term of calculus and access to an algebra or geometry class of secondary students; or cons. of course coordinator; admitted to MSST or College of Education.

MSSC 6910. Topics in Mathematical or Statistical Sciences. 3 cr. hrs.
Topics vary. Multiple enrollments allowed under different topics.

MSSC 6931. Topics in Mathematical or Statistical Sciences. 3 cr. hrs.
The historical evolution of mathematics learning theories and research-generated conceptions of mathematics learning; comparisons of various learning theories and their impact on research in mathematics learning; implications of research and learning theories on curriculum development; implications of mathematics learning research/theories on the teaching and learning of mathematics. Prereq: Admitted to MSST or College of Education.

MSSC 6940. Seminar in Mathematics Curriculum Development and Material 1. 3 cr. hrs.
The historical evolution of mathematics learning theories and research-generated conceptions of mathematics learning; implications of research and learning theories on curriculum development; implications of mathematics learning research/theories on the teaching and learning of mathematics. Prereq: Admitted to MSST or College of Education.

MSSC 6945. Seminar in Mathematics Curriculum Development and Material 2. 3 cr. hrs.
Philosophy of education with particular attention to mathematics education; development by students of useful curricula in the form of teaching units, evaluation materials, and student and teacher bibliographies for specific topics, grade levels, and ability groups; aspects of supervision as related to the role of department chairperson. Prereq: MATH 6953; admitted to MSST or College of Education.

MSSC 6960. Seminar in Mathematical or Statistical Sciences. 1-3 cr. hrs.
Topics selected from one of the various branches of mathematics or statistics. Specific topics are announced in the Schedule of Classes.

MSSC 6974. Practicum for Research in Mathematical or Statistical Sciences. 1-3 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.
MSSC 6975. Practicum for Statistical Consulting. 3 cr. hrs.
Provides students with the opportunity to explore real-world examples of data analysis as a statistical consultant. Prereq: 3.000 MU GPA; completed at least 12 credit hours; cons. of the applied statistics dir. of graduate studies; or cons. of dept. ch.

MSSC 6995. Independent Study in Mathematical or Statistical Sciences. 1-5 cr. hrs.
Investigations in selected areas of mathematics or statistics. Prereq: Cons. of instr. and cons. of dept. ch.

MSSC 6998. Professional Project in Mathematical or Statistical Sciences. 0 cr. hrs.
SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

MSSC 8995. Independent Study in Mathematical or Statistical Sciences. 1-3 cr. hrs.
In-depth research on a topic or subject matter usually not offered in the established curriculum with faculty and independent of the classroom setting. Prereq: Cons. of instr. and cons. of dept. ch.

MSSC 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

MSSC 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Computer Science (COSC)

Chairperson: Sheikh Iqbal Ahamed, Ph.D.
Program Director: Praveen Madiraju, Ph.D.

Computer Science website (https://www.marquette.edu/grad/programs-computer-science-phd.php)

Degree Offered
Doctor of Philosophy

Program Description
The computer science graduate program prepares students for careers in research in industry, research laboratories and institutions of higher education. The program allows students to tailor course work based on their interests and strengths. The program places particular emphasis on students contributing to applied research in computer science.

The Department of Computer Science also offers a master of science in computing. (p. 112)

Prerequisites for Admission
Students are expected to have demonstrated academic excellence, and should have an undergraduate background in a computer science-related discipline.

Application Deadline
To be considered for fall admission, all application requirements must be completed and received in the Graduate School. The priority deadline for review of applications is Jan. 15. After the priority admission deadline, applications are reviewed on a rolling basis.

Application Requirements
Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. A statement of professional goals and aspirations.
4. Three letters of recommendation addressing the applicant's academic qualifications for graduate study in the intended program.
5. Graduate Record Examination (GRE) general test scores.
6. (For international applicants only) Test of English as foreign language (TOEFL) scores or other acceptable proof of English proficiency.
7. English-language publications authored by the applicant, including a master's thesis or essay, if applicable (optional, but strongly recommended).

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms are placed on the student's record.

Computer Science Doctoral Requirements
A doctoral student in computer science must first complete a plan of study on an approved Doctoral Program Planning Form, designed to see the student through completion of the qualifying examination. This plan of study should be prepared in cooperation with an adviser and approved by the Graduate Committee of the Department of Computer Science.

The total 57-credit program includes a minimum of 45 credit hours of approved course work beyond the bachelor's degree in computer science or related field plus 12 dissertation credits. Students must complete:

• 2 credit hours of COSC 6090 Research Methods/Professional Development, completed by the second year.
• 6-8 credit hours of COSC 6974 Practicum for Research and Development in Computer Science or COSC 6960 Seminar in Computer Science.
• 35-37 credit hours of electives. Elective course work must be chosen based on mutual agreement of the student and his or her adviser's mutual research interests. Each student is advised to take such courses as are properly related to academic background and research interests. No more than 18 credit hours may be taken at the 5000 level.
• 12 credit hours of COSC 8999 Doctoral Dissertation, which may only be taken after passing the qualifying examination.

Advancement to candidacy for the doctoral degree is considered following successful completion of the lecture course work specified in the Doctoral Program Planning Form and after passing the qualifying examination (written and oral). Following advancement to candidacy, students must submit a
Dissertation Research Plan that is approved by their advisory committee. Their proposal (written and oral) and dissertation (written and oral) must be approved.

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COSC 6090</td>
<td>Research Methods/Professional Development (1 credit, taken at least twice)</td>
<td>2</td>
</tr>
<tr>
<td>COSC 6974</td>
<td>Practicum for Research and Development in Computer Science</td>
<td>6-8</td>
</tr>
<tr>
<td>or COSC 6960</td>
<td>Seminar in Computer Science</td>
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</tr>
</tbody>
</table>

Approved Elective courses (no more than 18 credits at the 5000 level) 1

<table>
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<tr>
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<tbody>
<tr>
<td>COSC 5300</td>
<td>Networks and Internets</td>
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<td>COSC 5360</td>
<td>Computer Security</td>
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<td>COSC 5500</td>
<td>Visual Analytics</td>
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<tr>
<td>COSC 5610</td>
<td>Data Mining</td>
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<td>COSC 5800</td>
<td>Principles of Database Systems</td>
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<tr>
<td>COSC 6050</td>
<td>Elements of Software Development</td>
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<tr>
<td>COSC 6060</td>
<td>Parallel and Distributed Systems</td>
</tr>
<tr>
<td>COSC 6260</td>
<td>Advanced Algorithms</td>
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<tr>
<td>COSC 6270</td>
<td>Advanced Operating Systems</td>
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<td>COSC 6280</td>
<td>Advanced Computer Security</td>
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<tr>
<td>COSC 6330</td>
<td>Advanced Machine Learning</td>
</tr>
<tr>
<td>COSC 6360</td>
<td>Enterprise Architecture</td>
</tr>
<tr>
<td>COSC 6380</td>
<td>Advanced Database Systems</td>
</tr>
<tr>
<td>COSC 6390</td>
<td>Professional Seminar in Computing</td>
</tr>
<tr>
<td>COSC 6510</td>
<td>Business Intelligence</td>
</tr>
<tr>
<td>COSC 6530</td>
<td>Concepts of Data Warehousing</td>
</tr>
<tr>
<td>COSC 6540</td>
<td>Data Analytics</td>
</tr>
<tr>
<td>COSC 6550</td>
<td>Introduction to Cybersecurity</td>
</tr>
<tr>
<td>COSC 6560</td>
<td>Principles of Service Management and System Administration</td>
</tr>
<tr>
<td>COSC 6995</td>
<td>Independent Study in Computer Science</td>
</tr>
</tbody>
</table>

Additional courses as approved by adviser.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>COSC 8999</td>
<td>Doctoral Dissertation</td>
<td>12</td>
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</table>

Total Credit Hours 57

1 Students must work closely with advisers to create individualized plans of study, depending on the mutually agreed upon focus area. Not all electives in this list will be available to all students.

Courses

**COSC 5290. Real-Time and Embedded Systems. 3 cr. hrs.**

Foci on event-driven programming, real-time scheduling, and synchronization; worst-case execution time analysis and deadline analysis; real-time operating systems and real-time programming languages.

**COSC 5300. Networks and Internets. 3 cr. hrs.**

Focuses on data communication and network protocols, including the TCP/IP protocol suite; Internet transport, packet switching and routing; network programming and network applications. May consist of a 3 hr. lec. or a 2 hr. lec. and 2 hr. lab.

**COSC 5360. Computer Security. 3 cr. hrs.**

Fundamentals of computer security, including cryptography, access control, security policy models, attacks, surveillance, privacy, and forensics. Draws examples of security vulnerabilities and defenses from many areas of computer science such as operating systems, databases, networks and software engineering.

**COSC 5370. Internet of Things (IoT). 3 cr. hrs.**

Topics include the definition of IoT, trends in the adoption of IoT, the importance of the IoT in society, the current components of typical IoT devices and trends for the future. Focuses on IoT design considerations, constraints, and interfacing between the physical world and the device. Students are presented with design trade-offs between hardware and software, technologies behind the Internet of Things – RFID, NFC, Wireless networks, WSN, RTLS, GPS, agents, multiagent systems, IoT in retail, NFC applications for the IoT, and IoT in healthcare.

**COSC 5400. Compiler Construction. 3 cr. hrs.**

Lexical analysis, parsing, code generation and optimization. Includes theoretical foundations and the practical concerns of implementation.
COSC 5500. Visual Analytics. 3 cr. hrs.
Focuses on developing data products using the Javascript/D3 framework by combining concepts from human-computer interaction, visualization and design. Also focuses on model visualization, interpretation, A/B testing and design thinking.

COSC 5600. Fundamentals of Artificial Intelligence. 3 cr. hrs.
An introduction to the broad field of artificial intelligence. Topics include problem solving by searching, knowledge representation, reasoning, planning, decision making, learning, perception and language processing.

COSC 5610. Data Mining. 3 cr. hrs.
Techniques for extracting and evaluating patterns from large databases. Introduction to knowledge discovery process. Fundamental tasks including classification, prediction, clustering, association analysis, summarization and discrimination. Basic techniques including decision trees, neural networks, statistics, partitioned clustering and hierarchical clustering.

Topics include database concepts and architecture, data modeling, formal query languages such as relational algebra, commercial query language SQL, database access from application programs and a brief examination of advanced concepts including transactions, distributed databases, security and XML.

COSC 5820. Ethical and Social Implications of Data. 3 cr. hrs.
An introduction to the ethical and social consequences of collecting, curating and analyzing data in academia, public and private contexts. A socio-technical stance is taken in unpacking issues of algorithmic biases, fairness, transparency and accountability.

COSC 5860. Component-Based Software Construction. 3 cr. hrs.
Introduction to software components in the context of the object-oriented paradigm. Component development, component selection and adaptation/customization, component deployment and assembly/integration, and system architecture. Industry standards such as JavaBeans, CORBA Component Model, and Microsoft COM/DOM/COM+.

COSC 5931. Topics in Computer Science. 1-3 cr. hrs.
Topics selected from one of the various branches of computer science. Specific topics to be announced in the Schedule of Classes.

COSC 6050. Elements of Software Development. 3 cr. hrs.
Students explore the software design and development processes through a term project. Concepts covered include: requirements gathering and analysis, mapping requirements to a design, sound coding and documentation practices, configuration management, testing and quality assurance, system deployment and maintenance. Prereq: Programming in a high-level language, knowledge in data structures such as stacks, recursion, queues, trees and graphs.

COSC 6051. Professional Software Engineering 1. 3 cr. hrs.
Covers software engineering topics typically including: the software development life cycle (SDLC), development methodologies, software quality overview, configuration management, designing for risks and fault tolerance, languages and design, object-oriented programming, observational research and prototyping, requirements, software architectures, operating systems design and real time systems. Offered at General Electric facilities. As this course extends beyond the Marquette term, students receive the grade of IC initially. The IC grade converts to an A-F grade at the completion of the course. Prereq: GE employee in the Software Edison program.

COSC 6052. Professional Software Engineering 2. 3 cr. hrs.
Covers software engineering topics typically including: systems and communication networks, security and distributed systems, interoperability and standards, design for 'ility' (e.g., usability and reliability) and performance, design for parallel processing, embedded systems hardware for software developers, embedded systems software, software design patterns and algorithms. Offered at General Electric facilities. As this course extends beyond the Marquette term, students receive the grade of IC initially. The IC grade converts to an A-F grade at the completion of the course. Prereq: GE employee in the Software Edison program.

COSC 6053. Professional Software Engineering 3. 3 cr. hrs.
Covers software engineering topics typically including: database systems, decision science, data quality and analytics, user interface design, design for globalization, debugging and troubleshooting, approach, method, implementation and emerging software technologies. Offered at General Electric facilities. As this course extends beyond the Marquette term, students receive the grade of IC initially. The IC grade converts to an A-F grade at the completion of the course. Prereq: GE employee in the Software Edison program.

COSC 6054. Professional Software Engineering 4. 3 cr. hrs.
Covers design topics related to system design with embedded computing. Topics typically include: design of controls, design for low cost, design for serviceability, design for usability, design for reliability, program management, innovation, requirements management and design thinking. Offered at General Electric facilities. As this course extends beyond the Marquette term, students receive the grade of IC initially. The IC grade converts to an A-F grade at the completion of the course. Prereq: GE employee in the Software Edison program.

COSC 6055. Software Quality Assurance. 3 cr. hrs.
Provides a perspective on people, organizations, controls, processes and tools that collectively influence the success of a Software Quality Assurance (SQA) strategy. Discussion topics include quality approaches as they apply to: requirements, design, release, configuration management, testing, defect management, operations and support. Topics are discussed in the context of a traditional development approach (waterfall, CMMI) and more contemporary models driven by lean and agile practices. Covers considerations specific to implementing an SQA approach within a regulated setting. Approach emphasizes a hands-on view of SQA, thereby providing realistic takeaways to practice in a professional career.
COSC 6060. Parallel and Distributed Systems. 3 cr. hrs.
Students use and develop software for parallel and distributed computing systems. Topics include: job submission and management, tools for parallel and distributed software development, approaches for implementing parallel and distributed computation, parallel and distributed system architectures, and essential evaluation techniques. Prereq: COSC 3100 or equiv.

COSC 6090. Research Methods/Professional Development. 1 cr. hr.
Designed to introduce the process of research and communication of research in computer science, including presentation and publication of research, preparation of grant proposals, and ethical considerations. May be repeated.

COSC 6260. Advanced Algorithms. 3 cr. hrs.
Covers advanced paradigms for the design and analysis of efficient algorithms. Emphasizes fundamental algorithms and advanced methods of algorithmic design, analysis, and implementation. Domains include: string algorithms, network optimization, parallel algorithms, computational geometry, external memory and streaming algorithms, and advanced data structures.

COSC 6270. Advanced Operating Systems. 3 cr. hrs.
Fundamental concepts of operating systems including kernel data structures; process control and scheduling; interprocess communication and synchronization; virtual memory and memory management; mass storage systems and device control; protection and security; and protection and virtualization; evaluation and prediction of performance. Students are expected to spend at least three hours per week gaining hands-on experience in using and modifying a small operating system.

COSC 6280. Advanced Computer Security. 3 cr. hrs.
Symmetric key and public key cryptography, hash functions, random numbers and cryptanalysis; authentication and authorization, password-based security, ACLs and capabilities, covert channels, security models, firewalls and intrusion detection systems; authentication protocols, session keys, SSH, SSL, IPsec, Kerberos, WEP, and GSM; flaws and malware, buffer overflows, viruses and worms, malware detection, software reverse engineering, digital rights management, secure software development and operating systems security; fundamentals about bitcoin and cryptocurrency technologies. Students write programs for assignments using the C programming language.

COSC 6300. Advanced Machine Learning. 3 cr. hrs.
Provides a graduate-level introduction to machine learning and statistical pattern recognition and in-depth coverage of new and advanced methods in machine learning, as well as their underlying theory. Emphasizes approaches with practical relevance and discusses a number of recent applications of machine learning, such as data mining, computer vision, robotics, text and web data processing. An open research project is a major part of the course.

COSC 6340. Component Architecture. 3 cr. hrs.
Focuses on designing and implementing software components, and streamlining the translation from business intent into realized application behavior in a practical hands-on, business-based environment. Introduces service-oriented architecture (SOA) and principles such as loose coupling, abstraction, reusability, autonomy, statelessness, discoverability, interoperability and composability.

COSC 6345. Mobile Health (mHealth). 3 cr. hrs.
Offers a multidisciplinary overview of the emerging technologies used in mobile health (mHealth). Research and innovations in this area promise solutions to the need for broader access to affordable and effective healthcare by enabling consumers and their caregivers to take charge of their health and well-being. mHealth is the provision of health information and services using sensor data via mobile phones and tablets. Students develop foundational knowledge of understanding the behaviors, different data models, security and privacy issues.

COSC 6350. Distributed Computing. 3 cr. hrs.
Introduces a broad spectrum of topics encompassing system architecture, software abstractions, distributed algorithms and issues pertaining to distributed environments such as replication, consistency, fault tolerance, transactions and security.

COSC 6355. Mobile Computing. 3 cr. hrs.
Focuses on the fundamentals of mobile computing, challenges in mobile computing, mobility management and mobile data management. Also focuses on context awareness and wireless communications, ubiquity of wireless communication technologies and standards, seamless access network services and resources from anywhere, at anytime, middleware for mobile computing, operation systems, programming languages, network protocols and security aspects of mobile computing. Explores concepts in sensor networks, including operating systems, programming languages, network protocols and programming models. Prereq: COSC 2100 or equiv.

COSC 6360. Enterprise Architecture. 3 cr. hrs.
Focuses on key topics and concepts that represent enterprise architecture (EA). Addresses the people, process and technology elements of EA from both a business and technical perspective. Explores the background, history, planning, governing, maintaining and common methodologies associated with EA. Prototypes some of the technology used in enterprises today to gain a better understanding of how information is represented, systems are integrated and standards are put into practice.

COSC 6375. Web Technologies. 3 cr. hrs.
Exposes students to design and architectural principles in developing web applications. Focuses on the client side, middleware and service layer of web applications. Topics range from HTML, JavaScript, JQuery, Java Servlets, MVC Design Pattern, Java Spring MVC, SQL, JDBC, Hibernate, AngularJS and Cloud Computing.

COSC 6380. Advanced Database Systems. 3 cr. hrs.
Focuses on newer, advanced database techniques in the areas of Big Data, NoSQL, Hadoop and Apache Spark. Covers main NoSQL data management topics such as document databases, key-value stores and graph databases. Prereq: Database Systems or equiv.
COSC 6390. Professional Seminar in Computing. 1 cr. hr.
Topic to be chosen each term from among issues important to all professionals in computing. All students specifically in the computing program are expected to participate for the fall and spring terms, and one of the two summer terms. S/U grade assessment.

COSC 6500. Foundations of Computing. 7 cr. hrs.
Presents the breadth and current status of computer science in our computerized society and the fundamentals of professional knowledge, skills and abilities. Foundational topics are intermixed with study of software development which include an introduction to abstraction, algorithmic thinking, simulation and testing for computer-based problem solving using higher-level programming languages. Algorithm analysis and computational complexity are presented in the context of considering data structures, algorithms and alternatives. Students program exercises using graphical user interfaces, data base connections, parallel computing and interfaces to the World Wide Web (WWW). Experience includes using an interactive development environment, studying software development methodology, and testing code, basic system administration, computer networking and operating system configuration.

COSC 6510. Business Intelligence. 3 cr. hrs.
Foundational topics in business intelligence. Includes properties and benefits for business intelligence and methodology for the development of business intelligence solutions. Examines technology employed for managing data and creating visualizations and dashboards. Topics include developing a business case, evaluating performance and managing data. Presents overview of data architectures commonly used in business intelligence solutions and includes exercises using common techniques for prediction and time series analysis.

COSC 6520. Business Analytics. 3 cr. hrs.
Foundational topics in the analysis of data from a business perspective. Includes methodology for the development of business analytics systems. Examines technology employed for business analytics in a variety of industry segments and the benefits derived from business analytics. Foundations of text and data mining techniques commonly used for classification, clustering and prediction. Students are presented techniques for developing a business case, evaluating predictive performance and managing data. Includes exercises using analytic technology and a project to apply analytics to a customer application. Students without programming experience are advised to complete COSC 6510 Business Intelligence before attempting COSC 6520.

COSC 6530. Concepts of Data Warehousing. 3 cr. hrs.
Provides an introduction to data warehouse design. Reviews topics in data modeling, database design and database access. Data warehouse planning, design, implementation and administration. The role of data warehouse in supporting decision support systems (DSS), business intelligence and business analytics.

COSC 6540. Data Analytics. 3 cr. hrs.
Introduces the most important information technologies used in manipulating, storing, and analyzing big data. Examines the basic tools for statistical analysis, R, Python, and several machine learning algorithms. Emphasis is on designing, implementing and developing machine learning algorithms. Particular focus is placed on interpretation and visualization of results. Prereq: Familiarity with Intermediate Python or R is recommended.

COSC 6550. Introduction to Cybersecurity. 3 cr. hrs.
Provides an introduction to cybersecurity threats, methods and security techniques. Foundations of various cybersecurity frameworks and methods for applying them to different types of organizations. Includes cyber threat environment, along with methods, tools and techniques that can help mitigate vulnerabilities and reduce risks to an organization.

COSC 6560. Principles of Service Management and System Administration. 3 cr. hrs.
Introduction to the concepts, principles and practices involved in the operations of secure computing systems. Presents principles of service management and explores how the principles of system administration are derived from concepts of delivering quality services. Lab exercises performing rudimentary tasks of a system administrator using virtual machine environments. Foundation topics include: cryptography, popular operating systems for servers, network configuration, system components, networked systems, host management, user management, configuration of servers and services, incident management, change management, security, monitoring and analysis of operations. Prereq: Basic knowledge of scripting, operating systems and services.

COSC 6570. Data at Scale. 3 cr. hrs.
Combines ideas from parallel databases, distributed systems and programming languages to analyze data at scale. Relevant technologies are introduced and taught in an accessible and inclusive way. Some examples include cloud computing, SQL and NoSQL databases, MapReduce ecosystem, Spark and its contemporaries and graph databases.

COSC 6931. Topics in Computer Science. 3 cr. hrs.
Topics vary. Students may enroll more than once as the subject matter changes.

COSC 6960. Seminar in Computer Science. 1-3 cr. hrs.
Seminar topics selected from one of the various branches of computer science. Specific topics to be announced in the Schedule of Classes.

COSC 6964. Practicum for Research and Development in Computing. 3-6 cr. hrs.
S/U grade assessment. Prereq: 3.00 MU GPA; must be enrolled in Plan B option of the M.S. in computing program and have completed at least 15 credit hours earned in graduate (6000-level) courses. Available only to full-time students. Cons. of the computing dir. of graduate studies or cons. of dept. ch.
Involves practical application of the knowledge and skills being studied concurrently, and previously studied, in other course work for computing professionals. Prereq: Admission to the COMP program's integrated practicum option; cons. of the computing dir. of graduate studies or cons. of dept. ch.

COSC 6974. Practicum for Research and Development in Computer Science. 1-6 cr. hrs.
Students in the MS in Computing program should be registering for COSC 6964, Practicum for Research and Development in Computing. S/U grade assessment. Prereq: Cons. of dept. ch.

COSC 6995. Independent Study in Computer Science. 1-6 cr. hrs.
An in-depth study on a topic or subject matter usually not offered in the established curriculum with faculty and independent of the classroom setting. Prereq: Cons. of instr. and cons. of dept. ch.

COSC 6998. Professional Project in Computer Science. 0 cr. hrs.
SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

COSC 8995. Independent Study in Computer Science. 1-3 cr. hrs.
A doctorate level in-depth research on a topic or subject matter usually not offered in the established curriculum with faculty and independent of the classroom setting. Prereq: Cons. of instr. and cons. of dept. ch.

COSC 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

COSC 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Computing (COMP)

Chairperson: Sheikh Ahamed Iqbal Ph.D.
Program Director: Thomas Kaczmarek, Ph.D.
Computing website (https://www.marquette.edu/grad/programs-computing.php)

Department Affiliation

The master of science degree in computing is affiliated with the Department of Computer Science in the Klingler College of Arts and Sciences. The Department of Computer Science also offers a doctor of philosophy in computer science (p. 106).

Degree Offered

Master of Science

Degree Description

The master of science in computing is a professional degree designed with dual purposes. It can provide a pathway into the computing profession or enhance the skills of current professionals. The degree program is one of several graduate programs in the computer science department.

The program is designed with the flexibility and options that adult learners require. This begins with offering both thesis and non-thesis options. Master of science students are admitted under Plan B (non-thesis option) but may request Plan A (thesis option) and may also designate a specialization. Students are not required to select a specialization. There are two primary specializations that focus study on cyber security and data analytics (predictive analytics). A third specialization is offered for students with no formal background in computer science wishing to do a career change into computing.

Students in the computer science doctoral program who are also considering receiving a master of science degree are encouraged to apply for the master of science in computing Plan A (thesis option).

Program Description

Computing is a broad-based family of disciplines that includes computer science, computer engineering, software engineering, information systems and information technology. By design, the computing program allows the student to pursue studies in any combination of these disciplines. While most courses are offered in the Department of Computer Science, the program accepts courses from engineering and business and permits 6-credits of out-of-program electives.

This program strives to meet the educational needs of present and future computing professionals interested in starting a career or updating their skills. Careers are in areas such as cyber security, data analytics, business and systems analysis, software engineering, project management, enterprise architecture, business process modeling and management, database design and administration, technology management and service management.

Students may select courses from a large number of approved courses offered by the Department of Computer Science, the Department of Electrical and Computer Engineering, the Graduate School of Management, the Department of Mathematical and Statistical Sciences and other units on campus. Students selecting a specialization have required coursework that constitutes about one-half of the credit requirements for the degree.

Students may pursue the degree on a full-time or part-time basis. Courses are offered in the evenings and distance learning classes are available. Distance learning options that are provided for most courses offered in the department add flexibility to the program.

Prerequisites for Admission

Applicants must have completed, or be in the process of completing, a bachelor's degree from an accredited college or university. Applicants who are not in the career change specialization must have studied computer programming in a modern computer programming language with knowledge of algorithms and data structures (or have equivalent work experience). Applicants entering the career change specialization do not need the prerequisites in programming and data structures and algorithms. However, they must enroll in COSC 6500 Foundations of Computing, a summer-long boot camp-like experience designed to satisfy the prerequisites and provide the proper introduction for a career in computing.

Application Requirements

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).

2. Copies of all college/university transcripts except Marquette.¹

3. An essay outlining relevant work experience or education, career goals, possible areas of interest and reasons for seeking admission to this program.
4. Three letters of reference from professors or professionals familiar with the applicant’s abilities, academic work and/or professional background.

5. (For students applying for merit-based financial aid) GRE scores (General Test only).

6. (For international applicants who have not attended an English-speaking university only) a minimum TOEFL score of 80 on the Internet-based version or other acceptable proof of English proficiency.

Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms is placed on the student record.

Application Deadline

The master of science program in computing follows the Graduate School deadlines for the submission of applications: Decisions about acceptance into the program are made when all required documents for the application are received. Admission decisions are made independently of decisions to offer financial aid.

General Information

Students interested in applying to the program should consult the program website for additional information, including a description of specializations and a list of currently suggested courses for the degree.

A complete list and short description of the courses offered by the Department of Computer Science is available on the Department of Computer Science section of the bulletin.

Computing Master’s Requirements

Students are admitted to the program under the non-thesis option (Plan B). Students may apply for the thesis option (Plan A) on approval of a thesis outline by their adviser and the computing program’s graduate committee.

The course of study is very flexible. Students complete a breadth requirement and additional courses suited to their backgrounds and career goals. The program director and faculty advisers work very closely with students to ensure that they achieve their educational goals through appropriate course selection.

Computing students gain both breadth and an in-depth knowledge of their field.

Breadth Requirement

Computing students experience the breadth of the field by completing (or having completed before entering the program) study equivalent to at least three credits in four of the following five areas:

1. Information Management
2. Hardware and Software Architecture and Organization
3. Operating Systems
4. Programming Concepts and Skills
5. Software Engineering.

Classes at the 5000 level and the 6000 level have been designated by the program to cover the topics in each area, but satisfaction of the breadth requirement does not rely on any specific course selection. An individual plan is developed by the student and approved by the computing program’s director of graduate studies.

Career Focus

Students choose a primary career focus and a secondary career focus. The career focus aids in selecting courses that provide in-depth knowledge aligned with career objectives. The courses chosen in the primary career focus area and the secondary career focus area are driven by students’ interests working with an adviser. Each student must have at least 12 credit hours related to their primary career focus, and at least six credit hours in a different secondary career focus for a total of 18 credit hours.

Courses taken to satisfy the breadth requirement also count toward career focus requirements. No course may be counted toward satisfying both a primary and a secondary focus. The breadth requirements and the career focus requirements may be satisfied with any combination of approved 5000- and 6000-level classes.

Examples of a career focus include, but are not limited to, the following:
• Business Intelligence and Analytics
• Database Analysis/Administration/Architecture
• Information Security
• Mobile Computing
• System/Enterprise Architecture
• Software Development/Software Engineering.

Specific courses related to a career focus are designated by the computing program. The final course selections are determined on an individual basis with approval by an adviser. Consult the program website (http://www.marquette.edu/mscs/grad-computing.shtml/) for a list of the currently approved courses.

**Additional Course Work**

Courses beyond the breadth and career focus requirements are taken from a list of computer science, information technology and computer engineering courses approved by the computing program. Six out-of-program elective credits may be selected from other Marquette graduate courses germane to computing or its applications.

**Plan B Option (36 or 42 Credits)**

Students admitted to the computing career change specialization must complete a total of 42 credit hours, which must include COSC 6500 Foundations of Computing and 35 additional credit hours. The program of study includes individualized combinations of 12 credit hours for a primary career focus and 6 credit hours for a secondary career focus. At least 25 credit hours must be taken at the 6000 level.

All other students in Plan B must complete a total of 36 credit hours of course work. The program of study includes individualized combinations of 12 credit hours for a primary career focus and 6 credit hours for a secondary career focus. At least 18 credit hours must be taken at the 6000 level.

For all students, courses beyond the career focus and breadth requirements are taken from a list of computer science, information technology and computer engineering courses approved by the computing program.

**Integrated Practicum**

Within Plan B, the integrated practicum provides a unique opportunity for professional development. Students must indicate a desire to participate in the integrated practicum on their application to the program. Students must satisfy the requirements for a primary career focus as well as the breadth requirement. The primary career focus must be related to their work assignments. The practicum can serve as the 6 credit secondary career focus.

In the integrated practicum, practical assignments in a working enterprise enhance the “learn from doing” opportunity beyond the typical assigned exercises, case studies, and student projects. The student adviser works with a participating employer and the student to ensure a tight integration between course work and work assignments. Together they pair work assignments and courses to provide the simultaneous acquisition of foundational knowledge, professional skills, and professional experience. The integration of course work and experience begins in the first semester of the program and must continue through graduation.

The integrated practicum curriculum path meets the 36 credit requirement of Plan B through a minimum of 24 credits of course work (of which at least 12 credits must be at the 6000-level), students may choose 6 credits in the COSC 6390 Professional Seminar in Computing, and 6 credits in COSC 6965 Curriculum Integrated Practicum in Computing. Each 300-350 hours of integrated work experience earn one practicum credit. During the final practicum session, students will earn an additional practicum credit for a comprehensive paper demonstrating their competency in their primary career focus through accomplishments in their work assignments.

Additional considerations include:

- The student must maintain full-time graduate student status every term with the exception of the final term.
- Participation in this option is subject to the availability of open positions and the qualifications of the student.
- The student must apply to the master of science program in computing and inform the director of the program or their adviser of the intention to participate in the integrated practicum.
- The student must apply to the participating employer and meet all of the requirements for an academically qualified position.
- If for any reason continuing work assignments are not available, the student can complete the degree program under Plan B's non-thesis course work option.

**Plan A Option (30 credits)**

Students must supply an approved thesis outline to enter Plan A, the thesis option, which requires a total of 30 credits.

In Plan A, students must complete 24 credit hours of course work, of which at least 12 hours must be earned in graduate-level courses (6000-level and above). Students must also complete a master's thesis (COSC 6999 Master's Thesis) for 6 credit hours and pass the oral examination concentrated
on the thesis. The student must select a primary career focus, which is typically related to their thesis topic and meets the breadth requirement of the program. The six thesis credits are considered the secondary career focus.

Courses beyond the career focus, thesis and breadth requirements are taken from a list of computer science, information technology and computer engineering courses approved by the computing program. Six out-of-program elective credits may be selected from other Marquette graduate courses germane to computing or its applications.

### Specializations

The master of science program in computing offers three specializations: information assurance and cyber defense, big data and data analytics, and the computing career change opportunity. The 18 credit hours in the first two of these specializations fulfill the requirements for both the primary and the secondary career focus. In the computing career change opportunity specialization, students must work with their adviser to select a primary and secondary career focus.

#### Information Assurance and Cyber Defense

In addition to required course work, this specialization requires practical experience. The practicum options in the master of science program in computing provide 6 credit hours for the practical application of course work. With permission from the director of the graduate studies for the program, the student may substitute a professional project.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>COSC 6550</td>
<td>Introduction to Cybersecurity</td>
<td>3</td>
</tr>
<tr>
<td>COSC 6560</td>
<td>Principles of Service Management and System Administration</td>
<td>3</td>
</tr>
<tr>
<td>COSC 5300</td>
<td>Networks and Internets</td>
<td>3</td>
</tr>
<tr>
<td>COSC 6964</td>
<td>Practicum for Research and Development in Computing</td>
<td>6</td>
</tr>
<tr>
<td>or COSC 6965</td>
<td>Curriculum Integrated Practicum in Computing</td>
<td></td>
</tr>
<tr>
<td>Elective (Choose one)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>COSC 5360</td>
<td>Computer Security</td>
<td></td>
</tr>
<tr>
<td>COSC 5800</td>
<td>Principles of Database Systems</td>
<td></td>
</tr>
<tr>
<td>COSC 6355</td>
<td>Mobile Computing</td>
<td></td>
</tr>
<tr>
<td>COSC 6380</td>
<td>Advanced Database Systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>18</td>
</tr>
</tbody>
</table>

1. With consent, COSC 6998 Professional Project or COSC 6999 Master's Thesis may be substituted.

#### Big Data and Data Analytics

This specialization features course work related to trends in data management, parallelism, and data analysis techniques used for business applications.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COSC 6510</td>
<td>Business Intelligence</td>
<td>3</td>
</tr>
<tr>
<td>COSC 6520</td>
<td>Business Analytics</td>
<td>3</td>
</tr>
<tr>
<td>or COSC 6540</td>
<td>Data Analytics</td>
<td></td>
</tr>
<tr>
<td>COSC 6060</td>
<td>Parallel and Distributed Systems</td>
<td>3</td>
</tr>
<tr>
<td>COSC 6380</td>
<td>Advanced Database Systems (or 6000-level class with a focus on databases or data warehouses such as COSC 6530)</td>
<td>3</td>
</tr>
<tr>
<td>Elective-Graduate course emphasizing the application of data collection and analysis in a discipline outside of computing (requires consent of adviser)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>COSC 5610</td>
<td>Data Mining (or 6000-level graduate statistics course)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total Credit Hours</td>
<td>18</td>
</tr>
</tbody>
</table>

#### Computing Career Change Opportunity

The computing career change opportunity specialization is a workforce development initiative designed to move students from an underemployed status into a STEM career in computing. It supports a career change for students who do not have the prerequisite knowledge and skills in programming, data structures and algorithms. The specialization requires successful completion of foundations course COSC 6500 Foundations of Computing, supplying the computing program prerequisites in a 40 hour/week boot-camp-like environment. Students must then work with their adviser to select a primary and secondary career focus. Courses beyond the career focus, thesis and breadth requirements are taken from a list of computer science, information technology and computer engineering courses approved by the computing program.
Accelerated Bachelor’s–Master’s Degree Program

The Department of Computer Science offers an accelerated degree program where eligible students may obtain both a bachelor's degree and the professional master of science degree in computing in five years. Students are eligible to apply to this program as early as the final term of their sophomore year. Students wishing to participate in the five-year program must apply and be admitted to the program before their senior year.

Minimal criteria for application to the ADP include a GPA of at least 3.000 and the following course work: two terms of courses in programming; one course on data structures and algorithms.

Upon completion of the undergraduate degree, the ADP student must satisfy all of the requirements for the master of science degree in computing and complete additional required graduate courses. The summer term may be taken immediately after the senior year or the following summer.

Within the undergraduate degree program, the student enrolls in the required programming and data structures courses and 12 graduate credits related to a computing career. After completing the undergraduate program, there are three terms of graduate study. In these three terms, the student receives an additional 24 graduate credits, resulting in a total of 36 graduate credits.

Courses

COSC 5290. Real-Time and Embedded Systems. 3 cr. hrs.
Focuses on event-driven programming, real-time scheduling, and synchronization; worst-case execution time analysis and deadline analysis; real-time operating systems and real-time programming languages.

COSC 5300. Networks and Internets. 3 cr. hrs.
Focuses on data communication and network protocols, including the TCP/IP protocol suite; Internet transport, packet switching and routing; network programming and network applications. May consist of a 3 hr. lec. or a 2 hr. lec. and 2 hr. lab.

COSC 5360. Computer Security. 3 cr. hrs.
Fundamentals of computer security, including cryptography, access control, security policy models, attacks, surveillance, privacy, and forensics. Draws examples of security vulnerabilities and defenses from many areas of computer science such as operating systems, databases, networks and software engineering.

COSC 5370. Internet of Things (IoT). 3 cr. hrs.
Topics include the definition of IoT, trends in the adoption of IoT, the importance of the IoT in society, the current components of typical IoT devices and trends for the future. Focuses on IoT design considerations, constraints, and interfacing between the physical world and the device. Students are presented with design trade-offs between hardware and software, technologies behind the Internet of Things – RFID, NFC, Wireless networks, WSN, RTLS, GPS, agents, multiagent systems, IoT in retail, NFC applications for the IoT, and IoT in healthcare.

COSC 5400. Compiler Construction. 3 cr. hrs.
Lexical analysis, parsing, code generation and optimization. Includes theoretical foundations and the practical concerns of implementation.

COSC 5500. Visual Analytics. 3 cr. hrs.
Focuses on developing data products using the Javascript/D3 framework by combining concepts from human-computer interaction, visualization and design. Also focuses on model visualization, interpretation, A/B testing and design thinking.

COSC 5600. Fundamentals of Artificial Intelligence. 3 cr. hrs.
An introduction to the broad field of artificial intelligence. Topics include problem solving by searching, knowledge representation, reasoning, planning, decision making, learning, perception and language processing.

COSC 5610. Data Mining. 3 cr. hrs.
Techniques for extracting and evaluating patterns from large databases. Introduction to knowledge discovery process. Fundamental tasks including classification, prediction, clustering, association analysis, summarization and discrimination. Basic techniques including decision trees, neural networks, statistics, partitioning clustering and hierarchical clustering.

Topics include database concepts and architecture, data modeling, formal query languages such as relational algebra, commercial query language SQL, database access from application programs and a brief examination of advanced concepts including transactions, distributed databases, security and XML.

COSC 5820. Ethical and Social Implications of Data. 3 cr. hrs.
An introduction to the ethical and social consequences of collecting, curating and analyzing data in academia, public and private contexts. A socio-technical stance is taken in unpacking issues of algorithmic biases, fairness, transparency and accountability.

COSC 5860. Component-Based Software Construction. 3 cr. hrs.
Introduction to software components in the context of the object-oriented paradigm. Component development, component selection and adaptation/customization, component deployment and assembly/integration, and system architecture. Industry standards such as JavaBeans, CORBA Component Model, and Microsoft COM/DOM/COM+.

COSC 5931. Topics in Computer Science. 1-3 cr. hrs.
Topics selected from one of the various branches of computer science. Specific topics to be announced in the Schedule of Classes.
COSC 6050. Elements of Software Development. 3 cr. hrs.
Students explore the software design and development processes through a term project. Concepts covered include: requirements gathering and analysis, mapping requirements to a design, sound coding and documentation practices, configuration management, testing and quality assurance, system deployment and maintenance. Prereq: Programming in a high-level language, knowledge in data structures such as stacks, recursion, queues, trees and graphs.

COSC 6051. Professional Software Engineering 1. 3 cr. hrs.
Covers software engineering topics typically including: the software development life cycle (SDLC), development methodologies, software quality overview, configuration management, designing for risks and fault tolerance, languages and design, object-oriented programming, observational research and prototyping, requirements, software architectures, operating systems design and real time systems. Offered at General Electric facilities. As this course extends beyond the Marquette term, students receive the grade of IC initially. The IC grade converts to an A-F grade at the completion of the course. Prereq: GE employee in the Software Edison program.

COSC 6052. Professional Software Engineering 2. 3 cr. hrs.
Covers software engineering topics typically including: systems and communication networks, security and distributed systems, interoperability and standards, design for ’ility’ (e.g., usability and reliability) and defect management, design for parallel processing, software design patterns and algorithms. Offered at General Electric facilities. As this course extends beyond the Marquette term, students receive the grade of IC initially. The IC grade converts to an A-F grade at the completion of the course. Prereq: GE employee in the Software Edison program.

COSC 6053. Professional Software Engineering 3. 3 cr. hrs.
Covers software engineering topics typically including: database systems, decision science, data quality and analytics, user interface design, design for globalization, debugging and troubleshooting, approach, method, implementation and emerging software technologies. Offered at General Electric facilities. As this course extends beyond the Marquette term, students receive the grade of IC initially. The IC grade converts to an A-F grade at the completion of the course. Prereq: GE employee in the Software Edison program.

COSC 6054. Professional Software Engineering 4. 3 cr. hrs.
Covers design topics related to system design with embedded computing. Topics typically include: design of controls, design for low cost, design for serviceability, design for usability, design for reliability, program management, innovation, requirements management and design thinking. Offered at General Electric facilities. As this course extends beyond the Marquette term, students receive the grade of IC initially. The IC grade converts to an A-F grade at the completion of the course. Prereq: GE employee in the Software Edison program.

COSC 6055. Software Quality Assurance. 3 cr. hrs.
Provides a perspective on people, organizations, controls, processes and tools that collectively influence the success of a Software Quality Assurance (SQA) strategy. Discussion topics include quality approaches as they apply to: requirements, design, release, configuration management, testing, defect management, operations and support. Topics are discussed in the context of a traditional development approach (waterfall, CMMI) and more contemporary models driven by lean and agile practices. Covers considerations specific to implementing an SQA approach within a regulated setting. Approach emphasizes a hands-on view of SQA, thereby providing realistic takeaways to practice in a professional career.

COSC 6060. Parallel and Distributed Systems. 3 cr. hrs.
Students use and develop software for parallel and distributed computing systems. Topics include: job submission and management, tools for parallel and distributed software development, approaches for implementing parallel and distributed computation, parallel and distributed system architectures, and essential evaluation techniques. Prereq: COSC 3100 or equiv.

COSC 6090. Research Methods/Professional Development. 1 cr. hr.
Designed to introduce the process of research and communication of research in computer science, including presentation and publication of research, preparation of grant proposals, and ethical considerations. May be repeated.

COSC 6260. Advanced Algorithms. 3 cr. hrs.
Covers advanced paradigms for the design and analysis of efficient algorithms. Emphasizes fundamental algorithms and advanced methods of algorithmic design, analysis, and implementation. Domains include: string algorithms, network optimization, parallel algorithms, computational geometry, external memory and streaming algorithms, and advanced data structures.

COSC 6270. Advanced Operating Systems. 3 cr. hrs.
Fundamental concepts of operating systems including kernel data structures; process control and scheduling; interprocess communication and synchronization; virtual memory and memory management; mass storage systems and device control; protection and security; and protection and virtualization; evaluation and prediction of performance. Students are expected to spend at least three hours per week gaining hands-on experience in using and modifying a small operating system.

COSC 6280. Advanced Computer Security. 3 cr. hrs.
Symmetric key and public key cryptography, hash functions, random numbers and cryptanalysis; authentication and authorization, password-based security, ACLs and capabilities, covert channels, security models, firewalls and intrusion detection systems; authentication protocols, session keys, SSH, SSL, IPsec, Kerberos, WEP, and GSM; flaws and malware, buffer overflows, viruses and worms, malware detection, software reverse engineering, digital rights management, secure software development and operating systems security; fundamentals about bitcoin and cryptocurrency technologies. Students write programs for assignments using the C programming language.
COSC 6330. Advanced Machine Learning. 3 cr. hrs.
Provides a graduate-level introduction to machine learning and statistical pattern recognition and in-depth coverage of new and advanced methods in machine learning, as well as their underlying theory. Emphasizes approaches with practical relevance and discusses a number of recent applications of machine learning, such as data mining, computer vision, robotics, text and web data processing. An open research project is a major part of the course.

COSC 6340. Component Architecture. 3 cr. hrs.
Focuses on designing and implementing software components, and streamlining the translation from business intent into realized application behavior in a practical hands-on, business-based environment. Introduces service-oriented architecture (SOA) and principles such as loose coupling, abstraction, reusability, autonomy, statelessness, discoverability, interoperability and composability.

COSC 6345. Mobile Health (mHealth). 3 cr. hrs.
Offers a multidisciplinary overview of the emerging technologies used in mobile health (mHealth). Research and innovations in this area promise solutions to the need for broader access to affordable and effective healthcare by enabling consumers and their caregivers to take charge of their health and well-being. mHealth is the provision of health information and services using sensor data via mobile phones and tablets. Students develop foundational knowledge of understanding the behaviors, different data models, security and privacy issues.

COSC 6350. Distributed Computing. 3 cr. hrs.
Introduces a broad spectrum of topics encompassing system architecture, software abstractions, distributed algorithms and issues pertaining to distributed environments such as replication, consistency, fault tolerance, transactions and security.

COSC 6355. Mobile Computing. 3 cr. hrs.
Focuses on the fundamentals of mobile computing, challenges in mobile computing, mobility management and mobile data management. Also focuses on context awareness and wireless communications, ubiquity of wireless communication technologies and standards, seamless access network services and resources from anywhere, at anytime, middleware for mobile computing, operation systems, programming languages, network protocols and security aspects of mobile computing. Explores concepts in sensor networks, including operating systems, programming languages, network protocols and programming models. Prereq: COSC 2100 or equiv.

COSC 6360. Enterprise Architecture. 3 cr. hrs.
Focuses on key topics and concepts that represent enterprise architecture (EA). Addresses the people, process and technology elements of EA from both a business and technical perspective. Explores the background, history, planning, governing, maintaining and common methodologies associated with EA. Prototypes some of the technology used in enterprises today to gain a better understanding of how information is represented, systems are integrated and standards are put into practice.

COSC 6375. Web Technologies. 3 cr. hrs.
Exposes students to design and architectural principles in developing web applications. Focuses on the client side, middleware and service layer of web applications. Topics range from HTML, JavaScript, JQuery, Java Servlets, MVC Design Pattern, Java Spring MVC, SQL, JDBC, Hibernate, AngularJS and Cloud Computing.

COSC 6380. Advanced Database Systems. 3 cr. hrs.
Focuses on newer, advanced database techniques in the areas of Big Data, NoSQL, Hadoop and Apache Spark. Covers main NoSQL data management topics such as document databases, key-value stores and graph databases. Prereq: Database Systems or equiv.

COSC 6390. Professional Seminar in Computing. 1 cr. hr.
Topic to be chosen each term from among issues important to all professionals in computing. All students specifically in the computing program are expected to participate for the fall and spring terms, and one of the two summer terms. S/U grade assessment.

COSC 6500. Foundations of Computing. 7 cr. hrs.
Presents the breadth and current status of computer science in our computerized society and the fundamentals of professional knowledge, skills and abilities. Foundational topics are intermixed with study of software development which include an introduction to abstraction, algorithmic thinking, simulation and testing for computer-based problem solving using higher-level programming languages. Algorithm analysis and computational complexity are presented in the context of considering data structures, algorithms and alternatives. Students program exercises using graphical user interfaces, data base connections, parallel computing and interfaces to the World Wide Web (WWW). Experience includes using an interactive development environment, studying software development methodology, and testing code, basic system administration, computer networking and operating system configuration.

COSC 6510. Business Intelligence. 3 cr. hrs.
Foundational topics in business intelligence. Includes properties and benefits for business intelligence and methodology for the development of business intelligence solutions. Examines technology employed for managing data and creating visualizations and dashboards. Topics include developing a business case, evaluating performance and managing data. Presents overview of data architectures commonly used in business intelligence solutions and includes exercises using common techniques for prediction and time series analysis.

COSC 6520. Business Analytics. 3 cr. hrs.
Foundational topics in the analysis of data from a business perspective. Includes methodology for the development of business analytics systems. Examines technology employed for business analytics in a variety of industry segments and the benefits derived from business analytics. Foundations of text and data mining techniques commonly used for classification, clustering and prediction. Students are presented techniques for developing a business case, evaluating predictive performance and managing data. Includes exercises using analytic technology and a project to apply analytics to a customer application. Students without programming experience are advised to complete COSC 6510 Business Intelligence before attempting COSC 6520.
COSC 6530. Concepts of Data Warehousing. 3 cr. hrs.
Provides an introduction to data warehouse design. Reviews topics in data modeling, database design and database access. Data warehouse planning, design, implementation and administration. The role of data warehouse in supporting decision support systems (DSS), business intelligence and business analytics.

COSC 6540. Data Analytics. 3 cr. hrs.
Introduces the most important information technologies used in manipulating, storing, and analyzing big data. Examines the basic tools for statistical analysis, R, Python, and several machine learning algorithms. Emphasis is on designing, implementing and developing machine learning algorithms. Particular focus is placed on interpretation and visualization of results. Prereq: Familiarity with Intermediate Python or R is recommended.

COSC 6550. Introduction to Cybersecurity. 3 cr. hrs.
Provides an introduction to cybersecurity threats, methods and security techniques. Foundations of various cybersecurity frameworks and methods for applying them to different types of organizations. Includes cyber threat environment, along with methods, tools and techniques that can help mitigate vulnerabilities and reduce risks to an organization.

COSC 6560. Principles of Service Management and System Administration. 3 cr. hrs.
Introduction to the concepts, principles and practices involved in the operations of secure computing systems. Presents principles of service management and explores how the principles of system administration are derived from concepts of delivering quality services. Lab exercises performing rudimentary tasks of a system administrator using virtual machine environments. Foundation topics include: cryptography, popular operating systems for servers, network configuration, system components, networked systems, host management, user management, configuration of servers and services, incident management, change management, security, monitoring and analysis of operations. Prereq: Basic knowledge of scripting, operating systems and services.

COSC 6570. Data at Scale. 3 cr. hrs.
Combines ideas from parallel databases, distributed systems and programming languages to analyze data at scale. Relevant technologies are introduced and taught in an accessible and inclusive way. Some examples include cloud computing, SQL and NoSQL databases, MapReduce ecosystem, Spark and its contemporaries and graph databases.

COSC 6931. Topics in Computer Science. 3 cr. hrs.
Topics vary. Students may enroll more than once as the subject matter changes.

COSC 6960. Seminar in Computer Science. 1-3 cr. hrs.
Seminar topics selected from one of the various branches of computer science. Specific topics to be announced in the Schedule of Classes.

COSC 6964. Practicum for Research and Development in Computing. 3-6 cr. hrs.
S/U grade assessment. Prereq: 3.00 MU GPA; must be enrolled in Plan B option of the M.S. in computing program and have completed at least 15 credit hours earned in graduate (6000-level) courses. Available only to full-time students. Cons. of the computing dir. of graduate studies or cons. of dept. ch.

Involves practical application of the knowledge and skills being studied concurrently, and previously studied, in other course work for computing professionals. Prereq: Admission to the COMP program's integrated practicum option; cons. of the computing dir. of graduate studies or cons. of dept. ch.

COSC 6974. Practicum for Research and Development in Computer Science. 1-6 cr. hrs.
Students in the MS in Computing program should be registering for COSC 6964, Practicum for Research and Development in Computing. S/U grade assessment. Prereq: Cons. of dept. ch.

COSC 6995. Independent Study in Computer Science. 1-6 cr. hrs.
An in-depth study on a topic or subject matter usually not offered in the established curriculum with faculty and independent of the classroom setting. Prereq: Cons. of instr. and cons. of dept. ch.

COSC 6998. Professional Project in Computer Science. 0 cr. hrs.
SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

COSC 8995. Independent Study in Computer Science. 1-3 cr. hrs.
A doctorate level in-depth research on a topic or subject matter usually not offered in the established curriculum with faculty and independent of the classroom setting. Prereq: Cons. of instr. and cons. of dept. ch.

COSC 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

COSC 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
COSC 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9977. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9978. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9979. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COSC 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Counselor Education and Counseling Psychology (CECP)

Chairperson: Alan W. Burkard, Ph.D.
Department of Counselor Education and Counseling Psychology website (http://www.marquette.edu/education/grad/cecp.shtml/)

Degrees Offered
Master of Arts; Master of Science; Doctor of Philosophy

Program Overview
The College of Education is made up of two departments: Counselor Education and Counseling Psychology (CECP) and Educational Policy and Leadership (EDPL).

The Department of Counselor Education and Counseling Psychology offers programs that prepare graduate students to assume leadership roles in the areas of study provided by its programs and specializations. The department offers a master of science degree program in clinical mental health counseling, a doctor of philosophy degree program in counseling psychology, and a master of arts degree program in school counseling.

While Marquette University is concerned about the professional advancement of its students, facilitates the process of certification and provides excellent educational opportunities, it cautions that professional success in a chosen field requires, above all else, constant development of individual abilities, personal initiative and a professional sense of responsibility for fulfilling all one's appropriate legal, ethical and other professional responsibilities. Hence, the university facilitates the licensure process for students pursuing careers in education and other human service fields, but students must also take responsibility for meeting all the requirements for licensure or certification in their chosen fields.

Prerequisites for Admission
Applicants to all graduate programs in the Department of Counselor Education and Counseling Psychology should have graduated with, or be about to graduate with, a bachelor's or a master's degree from an accredited institution appropriate to their chosen field of graduate study. Students applying to a doctoral program without a master's degree must complete prerequisite master's courses as part of their doctoral program requirements.

While there are no course prerequisite requirements for CECP graduate programs, we highly recommend that students obtain experience in a human service setting (e.g., field work, volunteering or employment) to discern if the field is a good fit for their long-term professional goals.

Application Deadlines
Students are admitted to the department in the spring term to begin their programs the following fall. To be considered for admission, all application requirements must be completed and received in the Graduate School by the deadlines listed below:

Dec. 1 - For admission to the doctoral program in counseling psychology.
Feb. 1 - For admission to the master's programs in clinical mental health counseling and in school counseling.

Students admitted to these programs are not permitted to defer admission.

Application Requirements
Applicants, regardless of program, must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. Three letters of recommendation along with recommendation forms.
4. A statement of purpose. (See department website (http://www.marquette.edu/education/grad/cecp.shtml/) for instruction.)
5. A resume/vita.
6. GRE scores (General Test only).
7. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

See department website (http://www.marquette.edu/education/grad/cecp.shtml/) for more details.

After all applications are reviewed, the highest ranking applicants will be contacted for an interview with the faculty. This is required for admission. International applicants residing in foreign countries and applicants with extenuating circumstances may conduct their interviews over the phone.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student's record.
Courses

CECP 6995. Independent Study in Counselor Education and Counseling Psychology. 1-3 cr. hrs.
Provides opportunities to investigate and study areas of interest through readings, research, field experience, projects, and/or other educational activities under the direction of a faculty adviser. Normally on advanced or specialized topics that are not covered by regularly offered courses. Prereq: Cons. of instr. and cons. of dept. ch.

CECP 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of instr. and cons. of dept. ch.

CECP 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CECP 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CECP 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CECP 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CECP 9977. Field Placement Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CECP 9978. Field Placement Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CECP 9979. Field Placement Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CECP 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CECP 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CECP 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Clinical Mental Health Counseling (CMHC)

Chairperson: Alan W. Burkard, Ph.D.
Clinical Mental Health Counseling website (https://www.marquette.edu/grad/programs-clinical-mental-health-counseling.php)

Degree Offered
Master of Science

Program Description
Our master of science in clinical mental health counseling is dedicated to training professional counselors in evidence-based and emerging best practices and prepares students to practice as a professional counselor. Course work focuses on human development, psychopathology, assessment, theories of counseling, consultation, ethical and legal issues, multicultural issues and counseling research, as well as individual, group, family and counseling interventions. Field experiences, small group experiences and practicum and internship are required and lead to the development of science-practice integration in all of our graduates.

Clinical Mental Health Counseling Master’s Requirements

Specializations: Addiction Counseling, Child and Adolescent Counseling, Clinical Rehabilitation Counseling

The master of science degree program in clinical mental health counseling, with specialization options in addiction counseling, child and adolescent counseling, or clinical rehabilitation counseling, requires 60 credit hours and successful completion of a comprehensive examination.

For a program without a specialization, the following courses are required:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COUN 6000</td>
<td>Introduction to Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6003</td>
<td>Foundations of Clinical Mental Health Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6012</td>
<td>Professional Ethics and Legal Issues in Clinical Mental Health Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6020</td>
<td>Life-Span Human Development</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6030</td>
<td>Theories of Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6040</td>
<td>Multicultural Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6050</td>
<td>Research Methods in Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6060</td>
<td>Psychopathology and Diagnosis</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6070</td>
<td>Assessment in Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6080</td>
<td>Career Development and Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6120</td>
<td>Group Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6130</td>
<td>Family Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6150</td>
<td>Addictions Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6170</td>
<td>Trauma Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6180</td>
<td>Advanced Diagnosis and Treatment in Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6965</td>
<td>Counseling Practicum</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6986</td>
<td>Internship in Clinical Mental Health Counseling (completed over multiple terms)</td>
<td>6</td>
</tr>
</tbody>
</table>

Electives or optional specialization courses: Choose at least 2 courses from the following.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPS 6040</td>
<td>Social Basis of Behavior</td>
<td></td>
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<tr>
<td>COPS 6050</td>
<td>Biological Bases of Behavior</td>
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<td>Cognitive-Affective Bases of Behavior</td>
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<td>COUN 6160</td>
<td>Counseling with Children and Adolescents</td>
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<td>COUN 6220</td>
<td>Consultation Strategies</td>
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<td>COUN 6230</td>
<td>Psychopharmacology</td>
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</tr>
<tr>
<td>COUN 6400</td>
<td>Leadership and Administration of Mental Health Counseling Services</td>
<td></td>
</tr>
<tr>
<td>COUN 6931</td>
<td>Topics in Counseling</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 60

As part of their course work, students must also complete a practicum and an internship in an approved clinical mental health counseling setting. More detailed requirements can be obtained from the department office.
Specialization Course Requirements

Each of the three optional specializations require the following 42 credits of course work, plus the courses listed under each specific specialization below. Each program totals 60 credit hours.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>COUN 6000</td>
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<tr>
<td>COUN 6012</td>
<td>Professional Ethics and Legal Issues in Clinical Mental Health Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6020</td>
<td>Life-Span Human Development</td>
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<td>Psychopathology and Diagnosis</td>
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<td>COUN 6080</td>
<td>Career Development and Counseling</td>
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<td>COUN 6120</td>
<td>Group Counseling</td>
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<td>Family Counseling</td>
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<td>COUN 6150</td>
<td>Addictions Counseling</td>
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<td>COUN 6170</td>
<td>Trauma Counseling</td>
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<td>COUN 6180</td>
<td>Advanced Diagnosis and Treatment in Counseling</td>
<td>3</td>
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<tr>
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</table>

Addiction Counseling

The optional specialization in addiction counseling provides students with additional training concentrated on clinical services to clients experiencing difficulties with addictions and co-occurring disorders. In addition to the core requirements (42 credit hours) for the clinical mental health counseling program, students are required to take the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>COUN 6003</td>
<td>Foundations of Clinical Mental Health Counseling</td>
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<td>COUN 6230</td>
<td>Psychopharmacology</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6965</td>
<td>Counseling Practicum (specific to specialization)</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6986</td>
<td>Internship in Clinical Mental Health Counseling (specific to specialization,</td>
<td>6</td>
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<tr>
<td></td>
<td>completed over multiple terms)</td>
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<tr>
<td>One elective as approved by the director of graduate studies.</td>
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<td>3</td>
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<tr>
<td>Total Credit Hours</td>
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<td>18</td>
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</tbody>
</table>

Child and Adolescent Counseling

The optional specialization in child and adolescent counseling provides students with training concentrated on the provisions of clinical services to children, adolescents and their families. In addition to the core requirements (42 credit hours) for the clinical mental health counseling program, students are required to take the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>COUN 6003</td>
<td>Foundations of Clinical Mental Health Counseling</td>
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<tr>
<td>COUN 6160</td>
<td>Counseling with Children and Adolescents</td>
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<tr>
<td>COUN 6965</td>
<td>Counseling Practicum (specific to specialization)</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6986</td>
<td>Internship in Clinical Mental Health Counseling (specific to specialization,</td>
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<td></td>
<td>completed over multiple terms)</td>
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<tr>
<td>Total Credit Hours</td>
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Clinical Rehabilitation Counseling

The optional specialization in clinical rehabilitation counseling prepares students to: provide counseling services in rehabilitation agencies for youth and adults, understand the medical and psychosocial aspects of disabilities and provide a range of clinical services such as assessment, individual and group counseling, substance abuse counseling, career and vocational counseling and consultation. The specialization prepares students with the knowledge of the roles and responsibilities of a rehabilitation counselor. In addition to the core requirements (42 credit hours) for the clinical mental health counseling program, students are required to take the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>COUN 6005</td>
<td>Foundations of Rehabilitation Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6090</td>
<td>Medical and Psychosocial Aspects of Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6965</td>
<td>Counseling Practicum (specific to specialization)</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6986</td>
<td>Internship in Clinical Mental Health Counseling (specific to specialization,</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>completed over multiple terms)</td>
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<tr>
<td>Total Credit Hours</td>
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</tbody>
</table>
One elective as approved by the director of graduate studies.

Total Credit Hours 18

Courses

COUN 6000. Introduction to Counseling. 3 cr. hrs.
Introduction to the philosophical bases, history and development of counseling as a profession. Includes an emphasis on ethical and legal issues, as well as a focus on counselor roles and functions in various settings and current issues in professional practice. Addresses active listening and provides training in entry-level counseling skills through a laboratory experience. Prereq: Enrolled in the Clinical Mental Health or School Counseling program or cons. of dept. ch.

COUN 6001. Foundations of School Counseling. 3 cr. hrs.
Focuses on the principles and techniques of school counseling, as outlined by the American School Counselor Association National Model for School Counseling Programs. Covers consultation with parents and school personnel, program planning and curriculum intervention, roles and functions of counselors and other school personnel and contemporary school counseling issues. Prereq: COUN 6000 and COUN 6020.

COUN 6003. Foundations of Clinical Mental Health Counseling. 3 cr. hrs.
Introduces the roles and perspectives of clinical mental health counselors. Focuses on the professional knowledge base, skills and practices that are essential for counseling in a wide variety of clinical mental health settings. Introduces mental health delivery models and concepts, prevention strategies, interventions with target populations, crisis intervention, disaster responses and interventions for clients with mental disorders and their families. Prereq: COUN 6000.

COUN 6005. Foundations of Rehabilitation Counseling. 3 cr. hrs.
Introduces the roles, perspectives and professional issues of rehabilitation counselors. Focuses on the professional knowledge base, skills and practices that are essential for counseling in a wide variety of rehabilitation counseling settings. Introduces mental health and rehabilitation delivery models and concepts, rehabilitation counseling services within the continuum of care, case management, prevention strategies, emergency management system, crisis intervention, disaster responses and interventions for individuals with disabilities and their families. Prereq: COUN 6000.

COUN 6010. Professional Ethics and Legal Issues in School Counseling. 3 cr. hrs.
Covers the ethical foundations and standards of the school counseling profession. Focuses on how to apply ethical standards and legal and professional guidelines to situations faced by school counselors in educational settings. Discusses issues relevant to training, credentialing and professional issues in the field of school counseling. Prereq: COUN 6000.

COUN 6012. Professional Ethics and Legal Issues in Clinical Mental Health Counseling. 3 cr. hrs.
Covers the ethical foundations and standards of the counseling profession. Focuses on how to apply ethical standards and legal and professional guidelines to situations faced by counselors in clinical mental health counseling settings. Discusses issues relevant to training, credentialing and professional issues in the field of counseling. Prereq: COUN 6000.

COUN 6020. Life-Span Human Development. 3 cr. hrs.
An examination of the interaction among biological, psychological, social and cultural factors that influence human development over the life-span. Reviews theoretical frameworks describing optimal human development, as well as the developmental etiology of problematic behaviors. Discusses educational and counseling implications of these issues.

COUN 6030. Theories of Counseling. 3 cr. hrs.
Reviews and critically analyzes the major theoretical systems of counseling, as well as current research about counseling and therapy. Focuses on applying theoretical approaches and techniques to client conceptualization and counseling practice.

COUN 6040. Multicultural Counseling. 3 cr. hrs.
Covers current theory, research and practice approaches within the field of multicultural counseling. Explores the topic of cultural diversity across multiple aspects of identity, with a focus on implications for professional practice, including advocacy work. Prereq: COUN 6000 and COUN 6030; COUN 6964, which must be taken concurrently; and cons. of dept.

COUN 6050. Research Methods in Counseling. 3 cr. hrs.
Reviews theories underlying various research methodologies and the research process. Methods for needs assessment and program evaluation are considered. Includes development of a research proposal including the identification of a research problem and preparation of a research plan. Prereq: COUN 6000, COUN 6030 and COUN 6070.

COUN 6055. Introduction to Statistics. 3 cr. hrs.
Introduction to descriptive and inferential statistics including correlation, parametric and non-parametric techniques. Provides an overview of SPSS for data analysis.

COUN 6060. Psychopathology and Diagnosis. 3 cr. hrs.
Covers concepts of psychopathology and introduces methods of assessment and diagnosis for children, adolescents and adults with major mental disorders and personality disorders. Multiple perspectives of clients’ emotional and psychological distress, disturbances and behaviors are considered. Focuses on the development of students’ knowledge and skills to use the DSM diagnostic system while including acknowledgement of client strengths and resilience and the social and cultural context.
COUN 6070. Assessment in Counseling. 3 cr. hrs.
Introduction to the basic concepts and methods for the psychological assessment of individuals in school, work and mental health settings. Testing and assessment is presented within an ethical, social and cultural context. Students’ knowledge and skills to select, use and interpret selected standardized tests, checklists and rating forms are developed. Measures for assessing intelligence, achievement, personality, vocational interests and mental health issues are covered as is the use of clinical interviews to identify client issues. Prereq: COUN 6000.

COUN 6080. Career Development and Counseling. 3 cr. hrs.
Reviews theoretical approaches of career counseling and programming, as well as psychological, social and cultural factors that influence life-long career/vocational development. Components of career development programs and services are considered, as well as sources and uses of occupational and educational information. Prereq: COUN 6000, COUN 6020, COUN 6030 and COUN 6070.

COUN 6090. Medical and Psychosocial Aspects of Disabilities. 3 cr. hrs.
Medical and psychiatric care and rehabilitation; physical restoration; etiology, prognosis and therapy of common disabling conditions. Theory of psychosocial, cultural and contextual aspects of disability and the effect on disability management and quality of life. Psychiatric rehabilitation interventions address community assertive treatment, independent living and the club house model.

COUN 6110. Individual Counseling. 3 cr. hrs.
Examines the theory and research on individual counseling. Emphasizes skill development in the techniques and methods of counseling. Concurrent field experiences may be required. Prereq: COUN 6000 or COUN 6003 and cons. of instr.; or COPS 8000, COUN 6020 and cons. of instr.; admission to degree program.

COUN 6120. Group Counseling. 3 cr. hrs.
Purposes, functions, types, and principles of group counseling. Dynamics of group interaction. Leadership of groups. Understanding of and ability to engage in and evaluate small group processes and relationships. Students experience group processes and the therapeutic value of groups by participating as members of an in-class group or facilitating a group off-campus. Prereq: COUN 6000 and COUN 6030; concurrent field experiences may be required.

COUN 6130. Family Counseling. 3 cr. hrs.
Introduction to theoretical approaches and methods of family counseling. Overview of the history and current issues in family counseling. Prereq: COUN 6000 and concurrent or previous enrollment in COUN 6030.

COUN 6150. Addictions Counseling. 3 cr. hrs.
Introduction to theory and research about the prevention and treatment of substance abuse disorders. Emphasizes research-supported strategies and counseling skills designed to meet individual client needs. Prereq: COUN 6000.

COUN 6160. Counseling with Children and Adolescents. 3 cr. hrs.
Developmental stages and tasks of children and adolescents; theories and techniques of developmental and remedial counseling with children and adolescents; warning signs, possible causes and prevention and intervention strategies of behavior problems. Focuses on the assessment and integration of strength-based counseling approaches in counseling children and adolescents and addresses collaboration and consultation with families, schools and communities. Prereq: COUN 6000; COUN 6001 or COUN 6003; and COUN 6030.

COUN 6170. Trauma Counseling. 3 cr. hrs.
Examines the theories and research regarding trauma, trauma response and trauma counseling. Reviews the psychological and physiological effects of various types of trauma. Focuses on case conceptualization skills and a trauma informed perspective and approach to counseling. Prereq: COUN 6000; COUN 6020; COUN 6030; & COUN 6060.

COUN 6180. Advanced Diagnosis and Treatment in Counseling. 3 cr. hrs.
Explores advanced counseling diagnosis, treatment planning and intervention skills based on evidence-based practice. Students learn how to implement a structured diagnostic interview, engage in differential diagnosis and develop treatment planning. An emphasis is placed on the application of cognitive-behavioral interventions for disorders identified in DSM-5, as well as student demonstrations of treatment interventions. Prereq: COUN 6967.

COUN 6220. Consultation Strategies. 3 cr. hrs.
Analysis of consultation models, designing and implementing intervention strategies and evaluation of the total process. Introduction to the role and functions of a consultant. Analysis of current conceptual models, overview of design and implementation of intervention strategies and evaluation methods. Prereq: COUN 6000.

COUN 6230. Psychopharmacology. 3 cr. hrs.
Introduction to psychopharmacology including central nervous system, basic drug mechanisms, modes of drug action, medication treatment for psychological/psychiatric disorders and efficiency of drugs. Prereq: COUN 6060.

COUN 6400. Leadership and Administration of Mental Health Counseling Services. 3 cr. hrs.
Introduction to the knowledge and skills for counselor leadership roles in clinical mental health counseling services. Focuses on leading a community counseling agency with consideration to: effective administrative and business operational aspects of mental health services, the role of state regulations in the operation of mental health services, clinical supervision, licensure, finance, disaster and crisis planning and creating an effective work environment. Prereq: Concurrent enrollment in COUN 6986.
COUN 6410. Leadership and Educational Administration for School Counseling. 3 cr. hrs.
Focuses on leadership and educational administration practices essential to the development of a comprehensive school counseling program within K-12 educational settings. Examines contemporary educational leadership practices and educational policy, principles of collaboration and teamwork in schools, organizational structure of schools, school emergency management policies and practices, school-community relations and the importance of these topics to school counseling practice and comprehensive school counseling program development. Prereq: Concurrent enrollment in COUN 6990.

COUN 6931. Topics in Counseling. 2-3 cr. hrs.
In-depth study of theories and concepts in counseling which, because of their topicality, are not the subject of a regular course. Specific topics will be designated in the Schedule of Classes. Prereq: Cons. of instr.

COUN 6964. Individual Supervision Lab for Counseling Practicum. 0 cr. hrs.
Students participate in individual supervision to facilitate counseling skill development, case conceptualization skills, and professional development. Students meet weekly with their supervisors and develop skills to utilize individual supervision effectively in the aforementioned areas. Prereq: COUN 6003 or COUN 6005, which may be taken concurrently; and cons. of dept. ch.

COUN 6965. Counseling Practicum. 3 cr. hrs.
Supervised counseling practicum experience that requires a minimum of 100 clock hours (including 40 direct hours) and leads to the development of counseling skills. Students engage in their practicum activities at approved sites in the greater Milwaukee area and meet on campus weekly for a didactic seminar that furthers counseling skills and provides group supervision. Students are placed in settings that provide clinical training that is aligned with the general clinical mental counseling program or that is focused on their identified specialization (i.e., addictions counseling, child-adolescent counseling, clinical rehabilitation counseling). Addresses clinical mental health counseling practice and professional issues relevant to each specialization. Prereq: COUN 6000; and COUN 6001, COUN 6003 or COUN 6005, which may be taken concurrently.

COUN 6969. Multicultural Counseling Lab. 0 cr. hrs.
Students participate in small dialogue groups that expand and elaborate multicultural counseling topics presented in COUN 6040. Prereq: COUN 6040, which must be taken concurrently; and cons. of dept. ch.

COUN 6970. School Counseling Practicum. 3 cr. hrs.
A supervised practicum experience that requires a minimum of 100 clock hours (including 40 direct hours) and leads to the development of counseling skills. Students engage in their practicum activities at approved sites in the greater Milwaukee area and meet on-campus weekly for a didactic seminar that furthers counseling skills and provides group supervision. Prereq: COUN 6000; COUN 6001 which may be taken concurrently.

COUN 6986. Internship in Clinical Mental Health Counseling. 1-4 cr. hrs.
Supervised counseling experiences in assessment, diagnosis, intervention, prevention and consultation. Students engage in the internship activities at approved sites in the greater Milwaukee area and meet on-campus weekly for a didactic seminar and group supervision. Three credits of internship require a minimum of 300 clock hours of practicum activities. Students are placed in settings that provide clinical training that is aligned with the general clinical mental counseling program or that is focused on their identified specialization (i.e., addictions counseling, child-adolescent counseling, rehabilitation counseling). Addresses clinical mental health counseling practice and professional issues relevant to each specialization track. Prereq: COUN 6020, COUN 6060, COUN 6070 and COUN 6965; COUN 6040, COUN 6120 and COUN 6130, which may be taken concurrently; additional prerequisites may be required within each area of specialization.

COUN 6990. Internship in School Counseling. 1-3 cr. hrs.
Supervised school counseling experiences in the development and implementation of a comprehensive school counseling program and services, including: crisis intervention, individual and group counseling, academic and career planning, consultation, and development and teaching of school counseling curriculum. Students engage in the internship activities at approved elementary, intermediate and high schools in Southeast Wisconsin and meet on-campus weekly for a didactic seminar and group supervision. Three credits of internship require a minimum of 300 clock hours of practicum activities. Prereq: COUN 6000, COUN 6001, COUN 6010; COUN 6020, COUN 6030, COUN 6060, COUN 6070, COUN 6080 and COUN 6970; COUN 6040, COUN 6120 and COUN 6050 which may be taken concurrently.

COUN 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COUN 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COUN 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Counseling Psychology (COPS)

Chairperson: Alan W. Burkard, Ph.D.
Counseling Psychology website (https://www.marquette.edu/grad/programs-counseling-psychology.php)

Degree Offered
Doctor of Philosophy

Program Description
Our doctoral program in counseling psychology is based on a scientist-practitioner model for training professional psychologists and is fully accredited by the American Psychological Association. Students acquire a solid foundation of knowledge in the biological, cognitive, affective, individual and social bases of human behavior. Through course work in research design, measurement and statistics, students develop the skills needed to critically evaluate psychological research and to conduct their own independent research. Training in diagnosis, assessment, psychotherapy, consultation, practica, internship and ethics provides students with the necessary professional skills to practice as competent and ethical counseling psychologists. Supervised practica experiences are available through local hospitals, private and community agencies, the Veterans Affairs, and university counseling centers. Graduates are prepared to practice as psychologists, professors, consultants, administrators and researchers.

Counseling Psychology Doctoral Requirements

The counseling psychology program consists of 27 credits of course work in psychological foundations, 52 credits of course work in the counseling psychology professional core, a minimum of 1000 hours of doctoral practicum, a collaborative research project and a 12-credit dissertation, as well as an approved 2000-hour internship typically completed in one calendar year. Students are required to participate in faculty research teams throughout the program and are also required to participate in department seminars and colloquia.

Students who have completed relevant graduate course work prior to entry into the program may have some of their requirements waived if the previous course work is equivalent to the courses currently required by the program.

Course Requirements

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<th>Psychological Foundations</th>
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<tr>
<td>COPS 6040</td>
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<td>COPS 6050</td>
<td>Biological Bases of Behavior 3</td>
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<td>Cognitive-Affective Bases of Behavior 3</td>
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<tr>
<td>COUN 6020</td>
<td>Life-Span Human Development 3</td>
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<td>COPS 8310</td>
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<td>COPS 8311</td>
<td>Advanced Statistics and Research 3</td>
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<td>Measurement and Evaluation 3</td>
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<td>Counseling Practicum 3</td>
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<tr>
<td>COUN 6986</td>
<td>Internship in Clinical Mental Health Counseling (Completed over two terms) 3</td>
</tr>
</tbody>
</table>
COPS 8965 Counseling Psychology Practicum (Completed over four terms) 4

Electives - Choose two of the following: 6

- COUN 6130 Family Counseling
- COUN 6150 Addictions Counseling
- COUN 6170 Trauma Counseling
- COUN 6160 Counseling with Children and Adolescents
- COUN 6230 Psychopharmacology
- COUN 6400 Leadership and Administration of Mental Health Counseling Services

Pre-doctoral Internship

- COPS 8955 Internship Preparation Seminar 0
- COPS 8986 Internship in Counseling Psychology (Completed over three consecutive terms) 3

Collaborative Research Project - 0 credits

Dissertation

- CECP 8999 Doctoral Dissertation 12

Total Credit Hours 91

Examination Requirements

- Master's Comprehensive Examination: Students who do not enter the program with an appropriate master's degree are required to pass the Counselor Preparation and Comprehensive Examination (CPCE).
- Doctoral Qualifying Examination (DQE): For students to pass the DQE, they must receive a satisfactory rating on the Comprehensive Integrated Critical Literature Review (CICLR) and the Internship Readiness Exam (IRE). Details for these program requirements may be found in the program handbook. To be advanced to candidacy, students must complete all program course work, pass the DQE, have their dissertation proposal accepted, and have met the Graduate School’s residency requirement.

Courses

**COPS 6040. Social Basis of Behavior. 3 cr. hrs.**
Advanced study of the problems and paradigms of social psychologists and how they are used by the practitioner. Major topics include: socialization, value and attitudes, social comparison, conformity and group dynamics.

**COPS 6050. Biological Bases of Behavior. 3 cr. hrs.**
Covering an overview of the biological and physiological processes that underlie individual psychological functioning. Topics include: the role of the peripheral and central nervous, sensory, endocrine and muscular systems as they contribute to the individual’s adaptations to internal and external environments.

**COPS 6060. Cognitive-Affective Bases of Behavior. 3 cr. hrs.**
Addresses a foundation in the cognitive-affective basis for human behavior. Important topics include human cognition, emotions, affect, and mood, and their influence on learning, self-control, thought processes, decision-making, and behavior change. Emphasizes understanding current theories and methods of cognitive-affective psychology and neuroscience in all fundamental areas: perception, attention, memory, language, and executive functions.

**COPS 8000. Introduction to Counseling Psychology. 3 cr. hrs.**
Introduction to the specialization of counseling psychology, including the history, philosophical bases and current and emerging directions Emphasis on critically reviewing literature in the field and examining psychologist roles and functions. Prereq: Cons. of instr.; admission to counseling psychology program.

**COPS 8020. Professional Ethics and Legal Issues. 3 cr. hrs.**
Examines the ethical foundations and current ethical and legal guidelines for professionals in the behavioral health field.

**COPS 8032. Theories of Motivation. 3 cr. hrs.**
Classical and contemporary theory and practices. Motivation in complex situations, including set, level of aspiration, frustration and consumer motivation.

**COPS 8100. Neuropsychology. 3 cr. hrs.**
Introduction to discipline of neuropsychology, brain-behavior relationships, neuropsychological mechanisms in neuropathological conditions, neuropsychological assessment and treatment. Prereq: COPS 8210 and cons. of instr.

**COPS 8210. Cognitive Assessment. 3 cr. hrs.**
Introduction to the theory and practice of cognitive assessment. Development of skills in administration and interpretation of intelligence and achievement tests and writing testing reports; introduction to special topics of testing children and neuropsychological assessment. Prereq: Cons. of instr.

**COPS 8220. Personality Assessment. 3 cr. hrs.**
Extension of assessment skills developed in COPS 8210. Development of skills in selection and interpretation of objective personality assessments and self-report inventories, integration of results in testing reports and an introduction to projective personality assessment. Prereq: COPS 8210 and cons. of instr.
COPS 8230. Projective Assessment. 3 cr. hrs.
Supervised study in administration, interpretation, and application of projective techniques. Prereq: COPS 8220 and cons. of instr.

COPS 8240. Advanced Assessment. 3 cr. hrs.

COPS 8310. Intermediate Research and Statistics. 3 cr. hrs.
Advanced topics in univariate and bivariate statistical analyses and related methodological issues. Covers analysis of variance, correlation, nonparametric statistics and multiple regression. Includes use of statistical software. Prereq: COUN 6051 or equiv. and EDPS 6050 or equiv.

COPS 8311. Advanced Statistics and Research. 3 cr. hrs.
A comprehensive survey of multivariate data analysis. Reviews multiple regression and proceeds through an introduction to structural equation modeling. Includes use of statistical software. Prereq: COPS 8310 or equiv.

COPS 8320. Measurement and Evaluation. 3 cr. hrs.
Psychometric theory, test construction and evaluation procedures. Includes use of statistical software for investigating the reliability and validity of educational and psychological instruments. Prereq: COPS 8310 or equiv.

COPS 8330. Qualitative Research Methods in Psychology. 3 cr. hrs.
Survey of qualitative research methods used in psychology. Includes discussion of the evolution of qualitative research in counseling psychology, as well as other related fields and the controversies therein. Prereq: COPS 8311.

COPS 8870. Foundations in Clinical Supervision. 2 cr. hrs.
Examines the theory, research and practice of supervision in professional psychology. Reviews ethical and legal issues, and the professional guidelines for the training and supervision of counselors and psychologists. Students are required to facilitate small counseling skill development groups for master’s students in COUN 6000 during the course of the term. Prereq: COPS 8967.

COPS 8931. Topics in Counseling Psychology. 2-3 cr. hrs.
In-depth study of theories and concepts in counseling psychology which, because of their topicality, are not the subject of a regular course. The special topics will be designated in the Schedule of Classes. Prereq: Cons. of instr.

COPS 8955. Internship Preparation Seminar. 0 cr. hrs.
Assists advanced students in making appropriate plans and developing strong applications for their predoctoral psychology internships. Monthly meetings are required of all students in the year prior to applying for internship. SNC/UNC grade assessment. Prereq: Cons. of dir. of training.

COPS 8964. Multicultural Counseling Leadership Lab. 0 cr. hrs.
Lead and facilitate a small dialogue group of master’s students on multicultural theory and counseling topics that are initially discussed in COUN 6040. Labs occur in conjunction with COUN 6040. Students are required to enroll during the second term of their doctoral program. Prereq: COUN 6040 or equiv; and cons. of dept.

COPS 8965. Counseling Psychology Practicum. 1-4 cr. hrs.
S/U grade assessment. Prereq: COUN 6965 or equiv. and cons. of dir. of training.

COPS 8966. Clinical Supervision Lab. 0 cr. hrs.
Students engage in individual supervision experiences with master’s students enrolled in the Counseling Practicum courses and located in counseling practicum field placements. Prereq: COPS 8970, which must be taken concurrently; and cons. of dept.

COPS 8967. Counseling Skill Development Lab. 0 cr. hrs.
Lead and facilitate small groups of master’s students in development of introductory helping skills. Course provides initial experiences in leading group supervision, providing feedback on counseling skill development and facilitating counselor development. Labs occur in conjunction with COUN 6000. Prereq: COPS 8870, which must be taken concurrently, and cons. of dept.

COPS 8970. Practicum in Clinical Supervision. 1 cr. hr.
Provide clinical supervision for master’s students in the Clinical Mental Health Counseling program. Students apply supervision theory, research and practice guidelines in providing weekly on-campus supervision with master’s students who are completing the 100-hour practicum experience. Prereq: COPS 8950.

COPS 8986. Internship in Counseling Psychology. 1 cr. hr.
Supervised experiences in professional psychology. Internships must be planned in accordance with the departmental Counseling Psychology Internship handbook. A minimum of 2000 hours over one calendar year required. S/U grade assessment. Prereq: Cons. of dept. ch.; cons. of dir. of training.

COPS 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COPS 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COPS 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
School Counseling (SCCN)

Chairperson: Alan W. Burkard, Ph.D.

School Counseling website (https://www.marquette.edu/grad/programs-school-counseling.php)

Degree Offered

Master of Arts

Program Description

Our master of arts in school counseling program includes a variety of courses, practica, internship and other training experiences which offer comprehensive preparation for professional practice as a school counselor. Course work focuses on human development, psychopathology, research, assessment, theories of counseling, ethical and legal issues as well as individual, group and other school counseling interventions. Training in counseling skills begins in the first semester and an internship usually begins in the second year. This training prepares students to develop and deliver a Comprehensive School Counseling Program, which is aligned with the principles outlined by the American School Counselor Association National Model for School Counseling Programs.

School Counseling Master’s Requirements

School counseling requires a minimum of 48 credit hours and successful completion of a comprehensive examination. Students must complete the following core courses, as part of the total credits for the degree:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COUN 6000</td>
<td>Introduction to Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6001</td>
<td>Foundations of School Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6010</td>
<td>Professional Ethics and Legal Issues in School Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6020</td>
<td>Life-Span Human Development</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6030</td>
<td>Theories of Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6040</td>
<td>Multicultural Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6050</td>
<td>Research Methods in Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6060</td>
<td>Psychopathology and Diagnosis</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6070</td>
<td>Assessment in Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6080</td>
<td>Career Development and Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6120</td>
<td>Group Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6160</td>
<td>Counseling with Children and Adolescents</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6410</td>
<td>Leadership and Educational Administration for School Counseling</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6970</td>
<td>School Counseling Practicum</td>
<td>3</td>
</tr>
<tr>
<td>COUN 6990</td>
<td>Internship in School Counseling</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td></td>
<td><strong>48</strong></td>
</tr>
</tbody>
</table>

As part of their course work, students must also complete a practicum and an internship in a program approved PK-12 school setting. More detailed requirements for this specialization can be obtained from the department office.

Accelerated Bachelor’s - Master’s Degree Program

The Department of Counselor Education and Counseling Psychology offers early admission into its master of arts degree program in school counseling to Marquette University students working toward the undergraduate major in educational studies. Students can apply for admission to this program in the second term of their undergraduate sophomore or junior year. Students accepted into the accelerated degree program are eligible to enroll in up to 18 credits of school counseling (SCCN) course work that carry graduate credit during their junior and senior years; i.e., COUN 6000 Introduction to Counseling, COUN 6001 Foundations of School Counseling, COUN 6010 Professional Ethics and Legal Issues in School Counseling, COUN 6020 Life-Span Human Development, COUN 6030 Theories of Counseling, and COUN 6970 School Counseling Practicum. Credits obtained for these courses can be used to fulfill both undergraduate and graduate degree requirements. Once students inform the Graduate School of the completion of their undergraduate degree requirements, their graduate admission as a regular degree status student is activated. Students interested in this program can obtain further information from the Counselor Education and Counseling Psychology Department office.

Candidates for admission should minimally have undergraduate sophomore status, have completed EDUC 1000 Educational Inquiry 1: Critical Perspectives on Education, EDUC 1001 Psychological Development: Children and Adolescents and EDUC 2001 Teaching Practice 1: Instructional Design and Teaching Models and should have an educational studies GPA of at least 3.200. Candidates for admission should submit a resume, personal statement of program interest, transcripts and three letters of recommendation and are required to submit GRE scores prior to graduate degree
status being activated (typically submitted during the undergraduate senior year). An interview with program faculty is required to be admitted to the program. Candidates for admission to this program should notify the assistant dean for undergraduate advising and student services of their intentions.

Courses

COUN 6000. Introduction to Counseling. 3 cr. hrs.
Introduction to the philosophical bases, history and development of counseling as a profession. Includes an emphasis on ethical and legal issues, as well as a focus on counselor roles and functions in various settings and current issues in professional practice. Addresses active listening and provides training in entry-level counseling skills through a laboratory experience. Prereq: Enrolled in the Clinical Mental Health or School Counseling program or cons. of dept. ch.

COUN 6001. Foundations of School Counseling. 3 cr. hrs.
Focuses on the principles and techniques of school counseling, as outlined by the American School Counselor Association National Model for School Counseling Programs. Covers consultation with parents and school personnel, program planning and curriculum intervention, roles and functions of counselors and other school personnel and contemporary school counseling issues. Prereq: COUN 6000 and COUN 6020.

COUN 6003. Foundations of Clinical Mental Health Counseling. 3 cr. hrs.
Introduces the roles and perspectives of clinical mental health counselors. Focuses on the professional knowledge base, skills and practices that are essential for counseling in a wide variety of clinical mental health settings. Introduces mental health delivery models and concepts, prevention strategies, interventions with target populations, crisis intervention, disaster responses and interventions for clients with mental disorders and their families. Prereq: COUN 6000.

COUN 6005. Foundations of Rehabilitation Counseling. 3 cr. hrs.
Introduces the roles, perspectives and professional issues of rehabilitation counselors. Focuses on the professional knowledge base, skills and practices that are essential for counseling in a wide variety of rehabilitation counseling settings. Introduces mental health and rehabilitation delivery models and concepts, rehabilitation counseling services within the continuum of care, case management, prevention strategies, emergency management system, crisis intervention, disaster responses and interventions for individuals with disabilities and their families. Prereq: COUN 6000.

COUN 6010. Professional Ethics and Legal Issues in School Counseling. 3 cr. hrs.
Covers the ethical foundations and standards of the school counseling profession. Focuses on how to apply ethical standards and legal and professional guidelines to situations faced by school counselors in educational settings. Discusses issues relevant to training, credentialing and professional issues in the field of school counseling. Prereq: COUN 6000.

COUN 6012. Professional Ethics and Legal Issues in Clinical Mental Health Counseling. 3 cr. hrs.
Covers the ethical foundations and standards of the counseling profession. Focuses on how to apply ethical standards and legal and professional guidelines to situations faced by counselors in clinical mental health counseling settings. Discusses issues relevant to training, credentialing and professional issues in the field of counseling. Prereq: COUN 6000.

COUN 6020. Life-Span Human Development. 3 cr. hrs.
An examination of the interaction among biological, psychological, social and cultural factors that influence human development over the life-span. Reviews theoretical frameworks describing optimal human development, as well as the developmental etiology of problematic behaviors. Discusses educational and counseling implications of these issues.

COUN 6030. Theories of Counseling. 3 cr. hrs.
Reviews and critically analyzes the major theoretical systems of counseling, as well as current research about counseling and therapy. Focuses on applying theoretical approaches and techniques to client conceptualization and counseling practice.

COUN 6040. Multicultural Counseling. 3 cr. hrs.
Covers current theory, research and practice approaches within the field of multicultural counseling. Explores the topic of cultural diversity across multiple aspects of identity, with a focus on implications for professional practice, including advocacy work. Prereq: COUN 6000 and COUN 6030; COUN 6964, which must be taken concurrently; and cons. of dept.

COUN 6050. Research Methods in Counseling. 3 cr. hrs.
Reviews theories underlying various research methodologies and the research process. Methods for needs assessment and program evaluation are considered. Includes development of a research proposal including the identification of a research problem and preparation of a research plan. Prereq: COUN 6000, COUN 6030 and COUN 6070.

COUN 6055. Introduction to Statistics. 3 cr. hrs.
Introduction to descriptive and inferential statistics including correlation, parametric and non-parametric techniques. Provides an overview of SPSS for data analysis.

COUN 6060. Psychopathology and Diagnosis. 3 cr. hrs.
Covers concepts of psychopathology and introduces methods of assessment and diagnosis for children, adolescents and adults with major mental disorders and personality disorders. Multiple perspectives of clients’ emotional and psychological distress, disturbances and behaviors are considered. Focuses on the development of students’ knowledge and skills to use the DSM diagnostic system while including acknowledgement of client strengths and resilience and the social and cultural context.
COUN 6070. Assessment in Counseling. 3 cr. hrs.
Introduction to the basic concepts and methods for the psychological assessment of individuals in school, work and mental health settings. Testing and assessment is presented within an ethical, social and cultural context. Students' knowledge and skills to select, use and interpret selected standardized tests, checklists and rating forms are developed. Measures for assessing intelligence, achievement, personality, vocational interests and mental health issues are covered as is the use of clinical interviews to identify client issues. Prereq: COUN 6000.

COUN 6080. Career Development and Counseling. 3 cr. hrs.
Reviews theoretical approaches of career counseling and programming, as well as psychological, social and cultural factors that influence life-long career/vocational development. Components of career development programs and services are considered, as well as sources and uses of occupational and educational information. Prereq: COUN 6000, COUN 6020, COUN 6030 and COUN 6070.

COUN 6090. Medical and Psychosocial Aspects of Disabilities. 3 cr. hrs.
Medical and psychiatric care and rehabilitation; physical restoration; etiology, prognosis and therapy of common disabling conditions. Theory of psychosocial, cultural and contextual aspects of disability and the effect on disability management and quality of life. Psychiatric rehabilitation interventions address community assertive treatment, independent living and the club house model.

COUN 6110. Individual Counseling. 3 cr. hrs.
Examines the theory and research on individual counseling. Emphasizes skill development in the techniques and methods of counseling. Concurrent field experiences may be required. Prereq: COUN 6000 or COUN 6003 and cons. of instr.; or COPS 8000, COUN 6020 and cons. of instr.; admission to degree program.

COUN 6120. Group Counseling. 3 cr. hrs.
Purposes, functions, types, and principles of group counseling. Dynamics of group interaction. Leadership of groups. Understanding of and ability to engage in and evaluate small group processes and relationships. Students experience group processes and the therapeutic value of groups by participating as members of an in-class group or facilitating a group off-campus. Prereq: COUN 6000 and COUN 6030; concurrent field experiences may be required.

COUN 6130. Family Counseling. 3 cr. hrs.
Introduction to theoretical approaches and methods of family counseling. Overview of the history and current issues in family counseling. Prereq: COUN 6000 and concurrent or previous enrollment in COUN 6030.

COUN 6150. Addictions Counseling. 3 cr. hrs.
Introduction to theory and research about the prevention and treatment of substance abuse disorders. Emphasizes research-supported strategies and counseling skills designed to meet individual client needs. Prereq: COUN 6000.

COUN 6160. Counseling with Children and Adolescents. 3 cr. hrs.
Developmental stages and tasks of children and adolescents; theories and techniques of developmental and remedial counseling with children and adolescents; warning signs, possible causes and prevention and intervention strategies of behavior problems. Focuses on the assessment and integration of strength-based counseling approaches in counseling children and adolescents and addresses collaboration and consultation with families, schools and communities. Prereq: COUN 6000; COUN 6001 or COUN 6003; and COUN 6030.

COUN 6170. Trauma Counseling. 3 cr. hrs.
Examines the theories and research regarding trauma, trauma response and trauma counseling. Reviews the psychological and physiological effects of various types of trauma. Focuses on case conceptualization skills and a trauma informed perspective and approach to counseling. Prereq: COUN 6000; COUN 6020; COUN 6030; & COUN 6060.

COUN 6180. Advanced Diagnosis and Treatment in Counseling. 3 cr. hrs.
Explores advanced counseling diagnosis, treatment planning and intervention skills based on evidence-based practice. Students learn how to implement a structured diagnostic interview, engage in differential diagnosis and develop treatment planning. An emphasis is placed on the application of cognitive-behavioral interventions for disorders identified in DSM-5, as well as student demonstrations of treatment interventions. Prereq: COUN 6967.

COUN 6220. Consultation Strategies. 3 cr. hrs.
Analysis of consultation models, designing and implementing intervention strategies and evaluation of the total process. Introduction to the role and functions of a consultant. Analysis of current conceptual models, overview of design and implementation of intervention strategies and evaluation methods. Prereq: COUN 6000.

COUN 6230. Psychopharmacology. 3 cr. hrs.
Introduction to psychopharmacology including central nervous system, basic drug mechanisms, modes of drug action, medication treatment for psychological/psychiatric disorders and efficiency of drugs. Prereq: COUN 6060.

COUN 6400. Leadership and Administration of Mental Health Counseling Services. 3 cr. hrs.
Introduction to the knowledge and skills for counselor leadership roles in clinical mental health counseling services. Focuses on leading a community counseling agency with consideration to: effective administrative and business operational aspects of mental health services, the role of state regulations in the operation of mental health services, clinical supervision, licensure, finance, disaster and crisis planning and creating an effective work environment. Prereq: Concurrent enrollment in COUN 6986.
COUN 6410. Leadership and Educational Administration for School Counseling. 3 cr. hrs.
Focuses on leadership and educational administration practices essential to the development of a comprehensive school counseling program within K-12 educational settings. Examines contemporary educational leadership practices and educational policy, principles of collaboration and teamwork in schools, organizational structure of schools, school emergency management policies and practices, school-community relations and the importance of these topics to school counseling practice and comprehensive school counseling program development. Prereq: Concurrent enrollment in COUN 6990.

COUN 6931. Topics in Counseling. 2-3 cr. hrs.
In-depth study of theories and concepts in counseling which, because of their topicality, are not the subject of a regular course. Specific topics will be designated in the Schedule of Classes. Prereq: Cons. of instr.

COUN 6964. Individual Supervision Lab for Counseling Practicum. 0 cr. hrs.
Students participate in individual supervision to facilitate counseling skill development, case conceptualization skills, and professional development. Students meet weekly with their supervisors and develop skills to utilize individual supervision effectively in the aforementioned areas. Prereq: COUN 6003 or COUN 6005, which may be taken concurrently; and cons. of dept. ch.

COUN 6965. Counseling Practicum. 3 cr. hrs.
Supervised counseling practicum experience that requires a minimum of 100 clock hours (including 40 direct hours) and leads to the development of counseling skills. Students engage in their practicum activities at approved sites in the greater Milwaukee area and meet on campus weekly for a didactic seminar that furthers counseling skills and provides group supervision. Students are placed in settings that provide clinical training that is aligned with the general clinical mental counseling program or that is focused on their identified specialization (i.e., addictions counseling, child-adolescent counseling, clinical rehabilitation counseling). Addresses clinical mental health counseling practice and professional issues relevant to each specialization. Prereq: COUN 6000; and COUN 6001, COUN 6003 or COUN 6005, which may be taken concurrently.

COUN 6966. Multicultural Counseling Lab. 0 cr. hrs.
Students participate in small dialogue groups that expand and elaborate multicultural counseling topics presented in COUN 6040. Prereq: COUN 6040, which must be taken concurrently; and cons. of dept. ch.

COUN 6970. School Counseling Practicum. 3 cr. hrs.
A supervised practicum experience that requires a minimum of 100 clock hours (including 40 direct hours) and leads to the development of counseling skills. Students engage in their practicum activities at approved sites in the greater Milwaukee area and meet on-campus weekly for a didactic seminar that furthers counseling skills and provides group supervision. Prereq: COUN 6000; COUN 6001 which may be taken concurrently.

COUN 6966. Internship in Clinical Mental Health Counseling. 1-4 cr. hrs.
Supervised counseling experiences in assessment, diagnosis, intervention, prevention and consultation. Students engage in the internship activities at approved sites in the greater Milwaukee area and meet on-campus weekly for a didactic seminar and group supervision. Three credits of internship require a minimum of 300 clock hours of practicum activities. Students are placed in settings that provide clinical training that is aligned with the general clinical mental counseling program or that is focused on their identified specialization (i.e., addictions counseling, child-adolescent counseling, rehabilitation counseling). Addresses clinical mental health counseling practice and professional issues relevant to each specialization track. Prereq: COUN 6020, COUN 6060, COUN 6070 and COUN 6965; COUN 6040, COUN 6120 and COUN 6130, which may be taken concurrently; additional prerequisites may be required within each area of specialization.

COUN 6990. Internship in School Counseling. 1-3 cr. hrs.
Supervised school counseling experiences in the development and implementation of a comprehensive school counseling program and services, including: crisis intervention, individual and group counseling, academic and career planning, consultation, and development and teaching of school counseling curriculum. Students engage in the internship activities at approved sites in the greater Milwaukee area and meet on-campus weekly for a didactic seminar and group supervision. Three credits of internship require a minimum of 300 clock hours of practicum activities. Prereq: COUN 6000, COUN 6001, COUN 6010; COUN 6020, COUN 6030, COUN 6060, COUN 6070, COUN 6080 and COUN 6970; COUN 6040, COUN 6120 and COUN 6050 which may be taken concurrently.

COUN 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COUN 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

COUN 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Criminal Justice Data Analytics (CJDA)

Program Director: Darren Wheelock, Ph.D.

Criminal Justice and Data Analytics website (https://www.marquette.edu/grad/programs-criminal-justice-data-analytics.php)

Degree Offered

Master of Science, Plan B only

Program Description

The master of science in criminal justice data analytics (CJDA) is designed to develop graduates with the skills and knowledge to harness data and employ analytical tools effectively to inform ethical planning, decision making, and problem solving in criminal justice agencies and related organizations. The program also offers an accelerated 5-year bachelor’s and master’s degree option.

Learning Outcomes

Students completing the master of science in criminal justice data analytics will be able to:

1. Identify crime analysis opportunities that can be ethically addressed through an understanding of crime, criminal offending, the operations of criminal justice organizations, and the US criminal justice system.
2. Design and implement strategies for analyzing crime data using appropriate methods, tools, and datasets.
3. Analyze crime data to create actionable information, and use it to establish priorities, make decisions, and solve problems aligning with the ethics, needs, and values of individuals, communities, and stakeholders.
4. Display and explain the results of criminal justice data analytics projects using effective written, graphic, and verbal tools and techniques.
5. Use advanced data processing tools incorporating regulatory, data governance, master data management, data profiling, parallel and distributed processing best practices.

Prerequisites for Admission

Applicants should have:

- A baccalaureate degree from an accredited university in criminal justice, a related social science, data science, or other relevant educational experience with a cumulative GPA of at least 3.200.

- Prospective students are strongly encouraged to have taken an introduction to computer programming class (e.g., COSC 1010 Introduction to Software Development) before the start of the program.

- A grade of B or above in an undergraduate statistics course (e.g., SOCI 2060 Social Statistics or PSYC 2001 Psychological Measurements and Statistics, or equivalent).

- A GPA of 3.200 or higher in undergraduate upper-division course work.

Application Deadlines

Admission to the program is made on a rolling basis, but priority consideration is given to applicants who apply by February 15th. The deadlines for financial aid consideration are February 15 for the following fall term and November 15 for the following spring term.

Application requirements

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (https://www.marquette.edu/grad/future-apply.php).
2. Copies of all college/university transcripts except Marquette.¹
3. Official GRE scores. Waived if cumulative GPA is 3.200 or higher.
4. A statement of purpose describing reasons for pursuing an advanced degree and career goals.
5. Two recommendation letters from professors familiar with student’s academic achievements and qualifications.
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.
Criminal Justice Data Analytics Master’s Requirements

The master of science in criminal justice data analytics (CJDA) is an interdisciplinary program designed to utilize the existing data science program and expertise in the criminology and law studies program. Computer science (COSC) courses compose the program's data analytics core and provide instruction and training in computer science, data science and managing/manipulating large data sets. Criminology and law studies (CRLS) courses provide the context for applying the skills developed in the data analytics core to criminal justice related fields. The CRLS course work also includes a practicum, which provides students with an opportunity to analyze criminal justice data in collaboration with local agencies and organizations to examine evidence-based decisions and their ethical implications.

Program Requirements

Students must complete a total of 30 credit hours of course work for the master of science degree in criminal justice data analytics. This interdisciplinary program is composed of 15 credit hours in data analytics courses and 15 credit hours in criminology and law studies courses, including the practicum. The practicum's culminating experience provides the student an opportunity to work independently with a local non-profit or government agency through a community-engaged learning experience.

Required Course work

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<td>CRLS 5700</td>
<td>Ethics in Criminal Justice</td>
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<tr>
<td>CRLS 6100</td>
<td>Advanced Social Statistics</td>
<td>3</td>
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<tr>
<td>CRLS 6200</td>
<td>Introduction to Geographic Information Systems (GIS)</td>
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<td>CRLS Elective - choose one of the following:</td>
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<td>CRLS 5000</td>
<td>Criminological Theory</td>
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<td>CRLS 5350</td>
<td>Neighborhoods and Crime</td>
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<td>Crime Mapping</td>
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<td>COSC 5500</td>
<td>Visual Analytics</td>
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<td>COSC 5820</td>
<td>Ethical and Social Implications of Data</td>
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<td>COSC 6510</td>
<td>Business Intelligence</td>
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<td>COSC 6520</td>
<td>Business Analytics 1</td>
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<tr>
<td>or COSC 6540</td>
<td>Data Analytics</td>
<td>3</td>
</tr>
<tr>
<td>COSC 6570</td>
<td>Data at Scale 2</td>
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<tr>
<td>or COSC 6060</td>
<td>Parallel and Distributed Systems</td>
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</tr>
<tr>
<td>or COSC 6380</td>
<td>Advanced Database Systems</td>
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</tr>
<tr>
<td>CRLS 6975</td>
<td>Criminal Justice Data Analytics Practicum</td>
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</tbody>
</table>

Total Credit Hours: 30

1 COSC 6540 Data Analytics recommended for students with a programming background
2 COSC 6060 Parallel and Distributed Systems or COSC 6380 Advanced Database Systems recommended for students with a computer science background

MASTER’S DEGREE WITH THE DATA SCIENCE CERTIFICATE

The Department of Computer Science offers a data science certificate. If a criminal justice data analytics master's student chooses to also earn the certificate, admission to both programs may be concurrent. The same courses may be used to satisfy the requirements of the master’s program and certificate, as outlined in the university bulletin for each program. Students are expected to be admitted into all programs they intend to complete, although course work completed prior to admission may be allowed to apply toward program requirements. Certificates must be approved individually via the curriculum approval process as Title IV aid eligible in order for students in any of these programs to be eligible to apply for federal financial aid.

Details on the data science certificate can be found in this bulletin.

ACCELERATED DEGREE PROGRAM

The accelerated degree program (ADP) is designed to give Marquette University undergraduate students a more efficient means to obtain a master of science degree in criminal justice data analytics. Interested Marquette students in their junior year (or equivalent) must meet the following criteria in order to apply for the ADP:

- Students must have a minimum cumulative undergraduate GPA of 3.200.
- Students must have completed at least 18 credits of CRLS course work (6 courses) by the end of their junior year.
Undergraduates participating in this program are granted early admission to the Graduate School and are allowed to take specific graduate-level courses during their senior year. Candidates for admission should submit transcripts and two letters of recommendation, but need not submit GRE scores. Candidates for admission to this program should notify the department director of graduate studies of their intentions.
Data Science (DTSC)

Program Director: Michael Zimmer, Ph.D.
Data Science website (https://www.marquette.edu/grad/programs-data-science-certificate.php)

Degree Offered
Certificate

Program Description
The curriculum is designed to connect data analytics and data science skills and knowledge with the needs evident in a host of fields. This certificate program seeks to meet a significant need for data analytics experts, targeting a human-centered approach. Those completing this certificate program will be able to identify and articulate problems, issues and decisions that can be informed by data analytics approaches and the ethical and social issues surrounding them; design and implement advanced strategies for analyzing big data, and create and present actionable information.

Prerequisite for Admission
Applicants should have:

• An earned baccalaureate degree in any field with a GPA of at least 3.000.
• Basic computational thinking competency as demonstrated by completion of an introductory course (e.g., COSC 1010 Introduction to Software Development or equivalent). Alternatively, proof of successful completion of a recommended introductory online Python programming course as recommended by the program director.
• A foundational statistics course (e.g., PSYC 2001 Psychological Measurements and Statistics, SOCI 2060 Social Statistics or equivalent) with familiarity in programs such as R, MATLAB, SAS, Stata, etc. Alternatively, proof of successful completion of a recommended introductory online foundational statistics course as recommended by the program director.

Application Deadlines
Applications are reviewed on a rolling basis, and admitted students may begin their program in fall or spring.

Application Requirements
Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

Optional application requirements: a statement of purpose and three letters of recommendation.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms is placed on the student record.

Data Science Certificate Requirements
All students admitted to the data science certificate program are required to complete at least 15 credit hours of course work.

This ethically-centered graduate certificate is in the emerging interdisciplinary field of data science, which seeks to extract and quantify knowledge from large and/or heterogeneous data sets. The certificate prepares students to integrate advanced technology with modern statistical and mathematical practices and use data in action to directly benefit society. Students learn how to turn data into knowledge, thereby guiding problem-solving and decision-making.

A student must complete a minimum of 15 credits of course work from the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>COSC 5500</td>
<td>Visual Analytics</td>
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<tr>
<td>COSC 5820</td>
<td>Ethical and Social Implications of Data</td>
<td>3</td>
</tr>
<tr>
<td>COSC 6510</td>
<td>Business Intelligence</td>
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<tr>
<td>COSC 6520</td>
<td>Business Analytics¹</td>
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<td>or COSC 6540</td>
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<tr>
<td>COSC 6570</td>
<td>Data at Scale²</td>
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<tr>
<td>or COSC 6060</td>
<td>Parallel and Distributed Systems</td>
<td></td>
</tr>
<tr>
<td>or COSC 6380</td>
<td>Advanced Database Systems</td>
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<tr>
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<td><strong>Total Credit Hours</strong></td>
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</table>

1. COSC 6540 recommended for students with a programming background
2. COSC 6060 or COSC 6380 recommended for students with a computer science background
Dentistry (DENT)

Administration
Associate Dean for Research and Graduate Studies: Andrew R. Dentino, D.D.S., Ph.D.

Program Directors
Dental Biomaterials: David Berzins, B.S., Ph.D.
Endodontics (Acting): Bryon Ong, B.D.S.
Orthodontics: Dawei (David) Liu, D.D.S., M.S., Ph.D., Certificates
Periodontics: Vrisis Kofina, D.D.S., M.S.
Prosthodontics: Geoffrey Thompson, D.D.S., M.S., Certificate
School of Dentistry website (http://www.marquette.edu/dentistry/)

Degrees Offered
Master of Science degrees in five disciplines, Plan A only, with two options (see the Master's Requirements section for details)

Graduate Program Overview
The School of Dentistry offers graduate programs in dental biomaterials, endodontics, orthodontics, periodontics and prosthodontics. These programs can be modified to allow conjoint interdisciplinary graduate work to be undertaken in any other unit of the university, and a master of science or doctoral degree can be obtained through an appropriate graduate degree-granting department of the university or through the interdisciplinary Ph.D. program. Faculty for each dental graduate program are drawn both from full-time Dental School faculty and from practicing specialists in the field who serve as adjunct faculty (part-time faculty).

The dental biomaterials program is a non-accredited 2-year program leading to a master’s degree.

The master of science programs in endodontics, orthodontics, periodontics and prosthodontics are clinically and research based, offering specialty certification with the master’s degree. Graduates are prepared to handle complex clinical cases and to work effectively with both general dentists and other dental specialists. The endodontics program is a 24-month program, the orthodontics program is a 26.5-month program, and the periodontics and prosthodontics programs are 36 months each. Tuition for the specialty programs is charged at a flat rate as per the Tuition, Fees and Housing section of this bulletin. Any applicable instrument or service fees are charged during the fall term each year.

Course work requirements for each graduate program are determined by the director of the specific program in accordance with accreditation standards. Courses include study in basic health sciences, dental biomaterials, research methodology, clinical dental specialties and other related science disciplines, as appropriate.

Prerequisites for Admission
Selection for admission is based upon the applicant's academic standing and clinical abilities. Competitive applicants rank high in their dental school classes, have strong clinical skills and experiences and have some experience with research. In general, to be admitted to any of the graduate programs in clinical dentistry, the applicant must have graduated from an accredited dental school.

For the dental biomaterials program, the applicant may be either a dental school graduate or have a baccalaureate degree in science or engineering. In special cases, a student with a baccalaureate degree in another area, but who has an appropriate background, may be admitted to the dental biomaterials program.

Application Deadlines
July 15
For the endodontics program starting in June of the following year.

Aug. 1
For the periodontics and prosthodontics program starting in June of the following year.

Sept. 1
For orthodontics program starting in June of the following year.

Feb. 1
For the dental biomaterials program starting the following fall term. Applicants are encouraged to have their complete application submitted by February 1 to be considered for the fall entry class. Spring term entry is possible every other year (even years). The program director notifies admitted students regarding the starting date for their program.
Application Requirements

1. Applications for periodontics and prosthodontics programs are initially made through Postdoctoral Application Support Service (PASS) of the American Dental Education Association. A complete PASS application is required for consideration. Once accepted into the program through PASS, applicants need to complete the additional application requirements through Marquette University, listed below.

2. Applicants to the dental biomaterials, endodontics, and orthodontics programs must submit, directly to the Graduate School:
   a. A completed Marquette University application form and application fee online (http://marquette.edu/grad/future_apply.shtml/). Applicants must apply through Marquette, or they are not considered for admission. In addition, applicants may also apply through the Postdoctoral Application Support Service (PASS) operated by the American Dental Education Association (ADEA), but it is not required. The endodontics and orthodontics programs do not accept PASS.
   b. Official transcripts from all current and previous colleges/universities except Marquette. International applicants must have course grades converted to numerical values of 4.000, 3.000, 2.000, and 1.000 or to corresponding letter grades of A, B, C, and D, respectively. Where such a conversion is not possible, an explanation of the grading system used in the foreign dental school and undergraduate institution should accompany the official English translation of the grade transcripts. An outside equivalency report may be required for transcripts that are not in English. Ask your program director to confirm. Here is an appropriate link if needed: https://www.ece.org/
   c. Undergraduate and dental school grade point averages, and class rank in dental school.
   d. Three letters of recommendation reflecting the applicant’s clinical and academic abilities.
   e. Scores from the National Board Dental Examinations, Part I and Part II. Not required from dental biomaterials applicants or from graduates of non-U.S./non-Canadian dental schools.
   f. (For dental biomaterials applicants only) GRE scores strongly recommended (General Test only).
   g. (For orthodontics applicants only) GRE scores (General Test only).
   h. A curriculum vitae and a personal statement.
   i. (For orthodontics and periodontics applicants only) registration with National Matching Service. The orthodontics and periodontics programs are part of the Postdoctoral Dental Matching Program. Details of this program can be obtained through the Departments of Orthodontics and Periodontics.
   j. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

Non-Refundable Deposit

The Marquette University School of Dentistry requires that all admitted students to the graduate prosthodontics program submit a non-refundable deposit of $3,000 to the Graduate School in order to guarantee a spot in the program. The deposit is then applied toward tuition after the student registers for the initial summer session.

Non-Degree Students in Dentistry Courses

Normally, students with non-degree status are not permitted to enroll in dentistry courses. Graduate students from approved dental residency programs may enroll in any dental graduate courses but need prior approval from the School of Dentistry’s associate dean for research and graduate studies.

Dental Graduate Didactic Core Curriculum

The Dental Graduate Didactic Core Curriculum (DENT 6001-6003, DENT 6953) is designed to cover all didactic content areas applicable to the advanced practice of general dentistry and to each of the specialty areas of dentistry. The content areas are sequenced to present:

1. material of interest for the general dentist seeking additional training beyond predoctoral dental education
2. material of interest for each of the dental specialty areas
3. advanced material of interest for those intending to pursue academic/research careers.

The presentations are organized to emphasize the overlapping nature of scientific foundational material and each of the dental specialties. Additionally, the presentations are designed to accommodate those students entering the program immediately after undergraduate education as well as those students returning from varying years of private dental practice. The course of study is comprised of yearly repeating content cycles (sections) within the summer session and fall/spring terms. The Dental Graduate Didactic Core Curriculum (DENT 6001-6003) is offered from 8-9 a.m. Monday–Friday. Beyond the required classes for their program, students may register for as many DENT 6001-6003 sections as they wish during their graduate education. The sections covered in DENT 6001-6003 are listed below and a detailed description of section content is maintained in the form of comprehensive section syllabi available in the School of Dentistry office of the associate dean for research and graduate studies. Not all specialty/certificate programs are required to take every content area section of the core, but only those which are required by their CODA standards. Students may register repeatedly for any grading period containing material of interest and are free to rotate in and out of the courses as desired to obtain sections containing such material. Repeated registration for DENT 6001-6003 is differentiated through the use of section numbers that appear on official transcripts. Examinations and credit hours are variable and are determined by selected course sections. Grades for each course section are submitted directly to the Graduate School by course instructors at the end of each term. Official transcripts will designate the specific sections completed and the credit hours associated with those sections.

The content area sections covered annually by the Graduate Didactic Core Curriculum are as follows:
1. Emergency Medicine – A comprehensive review of the pathophysiology and treatment of the most common medical emergency states. Emphasis is placed on prevention, diagnosis, and patient stabilization.

2. Dental Biomaterials – Physical, mechanical, chemical, biologic behavior, properties, characterization, and testing of dental biomaterials. Biocompatibility of dental materials as well as advanced clinical concepts for general dentistry.

3. Prosthodontic Biomaterials – Advanced biomaterials and clinical concepts specific for prosthodontics.

4. Endodontic Biomaterials – Advanced biomaterials and clinical concepts specific for endodontics.

5. Orthodontic Biomaterials – Advanced biomaterials and clinical concepts specific for orthodontics.

6. Interdisciplinary Dentistry – Endodontic techniques as they relate to other areas of dental practice. Structure/function of the periodontium. Periodontal disease and therapy as it relates to all other aspects of dentistry emphasizing surgical approaches, occlusion, splinting, and periodontic/endodontic pathosis. A comprehensive discussion of prosthodontic procedures as they relate to other areas of dental practice emphasizing removable complete/partial dentures, fixed partial dentures, maxillofacial prosthetics and implants. A comprehensive discussion of orthodontic techniques as they relate to other areas of dental practice emphasizing cephalometrics, biomechanics of tooth movement, and tissue response to orthodontic procedures.

7. Technology and Informatics – A review of the current computer-based technologies available for independent self-directed learning, research, teaching approaches, patient care and professional communication. Emphasis is placed on biomedical applications and laboratory exercises are included to reinforce didactic concepts.

8. Craniofacial Growth and Development – Dental and facial growth and development from the embryonic period through adult life.

9. Advanced Oral Pathology – Principles and concepts of histopathology presented through review and microscopic study of surgical material and biopsy specimens of craniofacial lesions emphasizing pathogenesis of disease and histologic diagnosis. Laboratory exercises are included to reinforce didactic concepts.

10. Head/Neck Anatomy and Osteology – Systemic and regional approaches to the study of head/neck anatomy. Emphasis is placed on vasculature, musculature, innervation, lymphatic drainage, and morphology/anatomical landmarks of the various bones of the head/neck. Laboratory dissection and demonstration reinforce didactic concepts.

11. Pharmacology and Pain/Anxiety Management – The pharmacology of drugs commonly used for treatment of non-dental conditions that may affect the delivery of dental care either through direct action or through interaction with drugs commonly used in dental care. Emphasizes the neurophysiology of pain, control of pain by various classes of pharmacologic agents, and the behavioral management of dental fears.

12. Research Methodology/Design – An introduction to the research process. The scientific method is discussed. Emphasis is placed on selection of a suitable research topic, research ethics, simple study designs, and thesis preparation.

13. Biostatistics – An introduction to the various aspects of biostatistics. Emphasis is placed on data display and summary, summary statistics, populations and samples, probability and confidence intervals, power, type I and II errors, diagnostic tests, correlation and regression, and various test statistics.

14. Oral Microbiology, Infection, and Immunology – Inflammation, immunity, and oral microbiology emphasizing the mechanisms of microbial colonization and invasion, host response and pathogenesis of dental diseases. Molecular techniques used in diagnostics are also covered in these sections.

15. Biochemistry and Physiology of Mineralized Tissues – The chemical and cellular constituents of mineralized tissues and modern methods for their study. Emphasis is placed on bone physiology and metabolism.

16. Radiology and Imaging – Advanced concepts in radiology and modern imaging techniques applied to all aspects of dentistry.


18. Temporomandibular Disorders in Orthodontics – Neuromuscular and occlusal physiology, diagnosis, and treatment of functional disturbances involving the temporomandibular articular region specific to orthodontics.

19. Oral Pathophysicsiology – Current topics in salivary function/dysfunction, gingival crevicular fluid, de- and remineralization, and dentin sensitivity, and taste.


22. Speech Pathology – A review of the various speech pathologies emphasizing the interdisciplinary and integrative nature of treatment involving the dental professional.

23. Public Health/Public Service – The epidemiology of dental disease and access to care emphasizing the role of the dental professional in community health. A review of current local, state and federal programs for dental services.


26. Ethics – A review of various ethical dilemmas in practice settings including case studies for group discussion.

27. Implantology – Basic concepts for implant placement including review of relevant maxillary/mandibular anatomy, evaluation and screening of patients, augmentation considerations, surgical techniques, surgical complications/management and relevant emergency procedures.
28. **Restorative Treatment Planning** – Principles and concepts of complex Perio-prosthesis and implant prosthesis through case-based presentations with supporting literature.

29. **Tissue Engineering** – Basic concepts in scaffold generation, stem cell and growth factor seeding for craniofacial defects with exposure to the tissue engineering laboratory.

The Graduate School offers the following five master's degrees: Dental Biomaterials, Endodontics, Orthodontics, Periodontics and Prosthodontics.

### Dental Biomaterials Master's Requirements

Graduate students in dental biomaterials pursue the application of scientific principles to the study of dental biomaterials including relationships among compositions, physical properties and clinical properties for dental biomaterial systems.

A student in the dental biomaterials program must complete a minimum of 30 credit hours of course work, consisting of a curriculum of graduate dental biomaterials courses (23 credits), statistics (1-3 credits) and thesis work (6 credits). The dental biomaterials graduate program is an interdisciplinary program covering principles of materials science, engineering, chemistry, physics, biology and dentistry. Satisfactory completion of the didactic and research components of the program results in a master's degree through the Marquette University Graduate School. In addition to the courses offered by the School of Dentistry (described in detail under the Dental Biomaterials course description section of this bulletin), master's candidates may be required by their program adviser to select courses offered through other departments.

A student may choose to take an additional, optional elective for 1 additional credit hour that is not required for the degree. Typically, the topic of this course is tissue engineering within the School of Dentistry's dental graduate core curriculum. Elective courses in other appropriate areas in the dental graduate core curriculum or materials science (from the College of Engineering) may also be selected according to the backgrounds and interests of the individual students.

Master of science degree applicants may only be admitted to the program under Plan A, which has two options: the traditional thesis option and the publication option. In partial fulfillment of the requirements to obtain the master of science degree, all candidates must conduct a research project on an appropriate clinical or basic science topic, and successfully defend their research project. Format and content of the public defense is determined by the advisory committee.

Candidates are encouraged to pursue research that originates in their chosen dental specialty. Research projects are selected in consultation with the graduate program director. Where possible, graduate students are encouraged to do clinically relevant research.

Graduate students who choose the thesis option have their research and thesis preparation supervised by a primary adviser and approved by a thesis advisory committee that consists of at least three members. The publication option, in addition, culminates in the acceptance of a first author, original, peer-reviewed publication based on a research project. Selection of the publication option requires completion of a traditional thesis in the event the submitted manuscript is not accepted by the submission deadline listed in this bulletin. All graduate students are required to present their research formally.

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<thead>
<tr>
<th>Graduate Dental Biomaterials courses (23 credits):</th>
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<tbody>
<tr>
<td>BIMA 6101  Mechanical Behavior of Dental Biomaterials</td>
<td>3</td>
</tr>
<tr>
<td>BIMA 6102  Polymeric Dental Biomaterials</td>
<td>2</td>
</tr>
<tr>
<td>BIMA 6151  Dental Cements</td>
<td>2</td>
</tr>
<tr>
<td>BIMA 6201  Dental Metallurgy 1</td>
<td>3</td>
</tr>
<tr>
<td>BIMA 6202  Dental Metallurgy 2</td>
<td>3</td>
</tr>
<tr>
<td>BIMA 6251  Dental Ceramics</td>
<td>3</td>
</tr>
<tr>
<td>BIMA 6570  Biomaterials Science and Engineering</td>
<td>3</td>
</tr>
<tr>
<td>BIMA 6601  Dental Biomaterials Literature Review 1</td>
<td>1</td>
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<tr>
<td>BIMA 6602  Dental Biomaterials Literature Review 2</td>
<td>1</td>
</tr>
<tr>
<td>BIMA 6603  Dental Biomaterials Literature Review 3</td>
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<tr>
<td>BIMA 6604  Dental Biomaterials Literature Review 4</td>
<td>1</td>
</tr>
<tr>
<td>BIMA 6999  Master's Thesis</td>
<td>6</td>
</tr>
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</table>

Statistics course (1-3 credits):

| MSSC 5720  Statistical Methods | 1-3 |

| DENT 6003  Dental Graduate Didactic Core Curriculum 3 (Biostatistics) |  |

**Total Credit Hours** 30-32

### Endodontics Master's Requirements

A student in the endodontics program must complete a minimum of 30 credit hours of course work, including four credit hours in clinical practice per academic year (a total of eight credit hours for each program) and six credit hours of thesis work. The remaining credits may be divided among courses specific to the specialty discipline and elective courses. The endodontics program requires two full years of patient care. Satisfactory completion of
the didactic and clinical components of the program results in a specialty certification through the Marquette University Graduate School. Satisfactory completion of the research component of the program results in a master’s degree through the Marquette University Graduate School.

Master of science degree applicants may only be admitted to the program under Plan A, which has two options: the traditional thesis option and the publication option. In partial fulfillment of the requirements to obtain the master of science degree, all candidates must complete the relevant sections of the graduate core curriculum with a grade of B- or above, conduct a research project on an appropriate clinical or basic science topic, and successfully defend their research project. Format and content of the public defense is determined by the advisory committee.

Candidates are encouraged to pursue research that originates in their chosen dental specialty. Research projects are selected in consultation with the graduate program director. Where possible, graduate students are encouraged to do clinically relevant research.

Graduate students who choose the thesis option will have their research and thesis preparation supervised by a primary adviser and approved by a thesis advisory committee that consists of at least three members. The publication option, in addition, culminates in the acceptance of a first author, original, peer-reviewed publication based on a research project. Selection of the publication option requires completion of a traditional thesis in the event the submitted manuscript is not accepted by the submission deadline listed in this bulletin. All graduate students are required to present their research formally.

**eNDODONTICS**

**TYPICAL TWO-YEAR PROFESSIONAL PHASE - Master of Science**

**FIRST YEAR**

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<th>Course Name</th>
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<td>ENDO 6002</td>
<td>Advanced Endodontology 1</td>
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<tr>
<td>DENT 6001</td>
<td>Dental Graduate Didactic Core Curriculum 1 (Dental Biomaterials)</td>
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<tr>
<td>DENT 6001</td>
<td>Dental Graduate Didactic Core Curriculum 1 (Emergency Medicine)</td>
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<tr>
<td>DENT 6001</td>
<td>Dental Graduate Didactic Core Curriculum 1 (Endodontic Biomaterials)</td>
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<tr>
<td>DENT 6001</td>
<td>Dental Graduate Didactic Core Curriculum 1 (Management of Myofascial Pain)</td>
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<tr>
<td>DENT 6001</td>
<td>Dental Graduate Didactic Core Curriculum 1 (Research Methods and Design)</td>
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<td>DENT 6980</td>
<td>Teaching Experience in Dentistry</td>
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<tr>
<td>DENT 6999</td>
<td>Master's Thesis (1 Credit)</td>
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<tr>
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<td>Pulp Biology</td>
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<tr>
<td>ENDO 6301</td>
<td>Endodontics Clinic and Case Review 1</td>
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<td>ENDO 6371</td>
<td>Endodontics Literature and Book Review 1</td>
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<td>DENT 6002</td>
<td>Dental Graduate Didactic Core Curriculum 2 (Advanced Oral Pathology)</td>
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<td>DENT 6002</td>
<td>Dental Graduate Didactic Core Curriculum 2 (Biostatistics)</td>
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<td>DENT 6002</td>
<td>Dental Graduate Didactic Core Curriculum 2 (Ethics)</td>
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<td>DENT 6002</td>
<td>Dental Graduate Didactic Core Curriculum 2 (Oral Microbiology (Odd Years) or Immunology (Even Years))</td>
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<td>DENT 6002</td>
<td>Dental Graduate Didactic Core Curriculum 2 (Pharmacology and Pain Management)</td>
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<td>DENT 6002</td>
<td>Dental Graduate Didactic Core Curriculum 2 (Radiology and Imaging)</td>
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<td>DENT 6002</td>
<td>Dental Graduate Didactic Core Curriculum 2 (Technology/Informatics)</td>
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<td>Dental Graduate Didactic Core Curriculum 3 (Practice Management)</td>
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<tr>
<td>DENT 6953</td>
<td>Seminar in Interdisciplinary Dentistry</td>
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<td>ENDO 6003</td>
<td>Advanced Endodontology 2</td>
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<td>ENDO 6302</td>
<td>Endodontics Clinic and Case Review 2</td>
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<td>Endodontics Literature and Book Review 2</td>
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<td>DENT 6003</td>
<td>Dental Graduate Didactic Core Curriculum 3 (Head and Neck Anatomy)</td>
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<tr>
<td>DENT 6003</td>
<td>Dental Graduate Didactic Core Curriculum 3 (Implantology)</td>
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<td>DENT 6003</td>
<td>Dental Graduate Didactic Core Curriculum 3 (Inflammation/Wound Healing)</td>
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<td>Dental Graduate Didactic Core Curriculum 3 (Mineralized Tissues)</td>
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DENT 6003 Dental Graduate Didactic Core Curriculum 3 (Oral Physiology)
DENT 6003 Dental Graduate Didactic Core Curriculum 3 (Pediatric Dentistry)
DENT 6003 Dental Graduate Didactic Core Curriculum 3 (Practice Law/Jurisprudence)
DENT 6953 Seminar in Interdisciplinary Dentistry
DENT 6999 Master's Thesis (1 Credit)

SECOND YEAR
Summer Term
ENDO 6000 Clinical Patient Care-Endodontics
DENT 6999 Master's Thesis (1 Credit)

Fall Term
ENDO 6000 Clinical Patient Care-Endodontics
ENDO 6303 Endodontics Clinic and Case Review 3
ENDO 6373 Endodontics Literature and Book Review 3
DENT 6002 Dental Graduate Didactic Core Curriculum 2 (Oral Microbiology (Odd Years) or Immunology (Even Years))
DENT 6953 Seminar in Interdisciplinary Dentistry
DENT 6999 Master's Thesis (1 Credit)

Spring Term
ENDO 6000 Clinical Patient Care-Endodontics
ENDO 6304 Endodontics Clinic and Case Review 4
ENDO 6374 Endodontics Literature and Book Review 4
DENT 6953 Seminar in Interdisciplinary Dentistry
DENT 6999 Master's Thesis (1 Credit)

Orthodontics Master's Requirements

The orthodontic program is a 26.5 month program. A student in the orthodontics program must complete a minimum of 30 credit hours of course work, including appropriate credit hours in clinical practice per academic year and six credit hours of thesis work. The remaining credits are divided among courses specific to the specialty discipline and elective courses. Satisfactory completion of the didactic and clinical components of the program results in specialty certification through the Marquette University Graduate School. Satisfactory completion of the research component of the programs results in a master's degree through the Marquette University Graduate School.

Master of science degree applicants may only be admitted to the program under Plan A, which has two options: the traditional thesis option and the publication option. In partial fulfillment of the requirements to obtain the master of science degree, all candidates must complete the biostatistics and research design and methodology sections of the graduate core curriculum with a grade of B- or above, conduct a research project on an appropriate clinical or basic science topic, and successfully defend their research project. Format and content of the public defense is determined by the advisory committee.

Candidates are encouraged to pursue research that originates in their chosen dental specialty. Research projects are selected in consultation with the graduate program directors. Where possible, graduate students are encouraged to do clinically relevant research.

Graduate students who choose the thesis option will have their research and thesis preparation supervised by a primary adviser and approved by a thesis advisory committee that consists of at least three members. The publication option, in addition, culminates in the acceptance of a first author, original, peer-reviewed publication based on a research project. Selection of the publication option requires completion of a traditional thesis in the event the submitted manuscript is not accepted by the submission deadline listed in this bulletin. All graduate students are required to present their research formally.

Orthodontics

typical 26.5-Month professional phase - master of science

FIRST YEAR
Summer Term
ORTH 6000 Clinical Patient Care-Orthodontics
DENT 6001 Dental Graduate Didactic Core Curriculum 1 (Dental Biomaterials)
DENT 6001 Dental Graduate Didactic Core Curriculum 1 (Emergency Medicine)
DENT 6001 Dental Graduate Didactic Core Curriculum 1 (Management of Myofascial Pain)
DENT 6001 Dental Graduate Didactic Core Curriculum 1 (Orthodontic Biomaterials)
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**Fall Term**

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<td>ORTH 6110</td>
<td>Histopathology of Tooth Movement</td>
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**SECOND YEAR**

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**THIRD YEAR**

**Summer Term**

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Periodontics Master's Requirements

The periodontal program is a three-year program. A student in the periodontics program must complete a minimum of 50 credit hours of course work, including 12 credit hours of clinical practice and six credit hours of thesis work. The remaining credits will be from courses assigned by the course director which are specific to periodontology. The periodontics program requires three full years of direct patient care. Satisfactory completion of the didactic and clinical components of the program results in specialty certification through the Marquette University Graduate School. Satisfactory completion of the research component of the program results in a master's degree through the Marquette University Graduate School.

Master of science degree applicants may only be admitted to the program under Plan A, which has two options: the traditional thesis option and the publication option. In partial fulfillment of the requirements to obtain the master of science degree, all candidates must complete the appropriate sections of the graduate core curriculum with a grade of B- or above, conduct a research project on an appropriate clinical or basic science topic, and successfully defend their research project. Format and content of the public defense is determined by the advisory committee.

Candidates are encouraged to pursue research that originates in their chosen dental specialty. Research projects are selected in consultation with the graduate program director. Where possible, graduate students in advanced dental specialty programs are encouraged to do clinically relevant research.

Graduate students who choose the thesis option will have their research and thesis preparation supervised by a primary adviser and approved by a thesis advisory committee that consists of at least three members. The publication option, in addition, culminates in the acceptance of a first author, original, peer-reviewed publication based on a research project. Selection of the publication option requires completion of a traditional thesis in the event the submitted manuscript is not accepted by the submission deadline listed in this bulletin. All graduate students are required to present their research formally.

Periodontics

TYPICAL THREE-YEAR PROFESSIONAL PHASE - MASTER of Science

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**SECOND YEAR**

**Summer Term**

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**THIRD YEAR**

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**Prosthodontics Master's Requirements**

The prosthodontic program is a three-year program. A resident in the prosthodontic program must complete a minimum of 42 credit hours of course work, including 12 credit hours of clinical practice, and six credit hours of thesis work. The remaining credits will be from courses assigned by the program director. The prosthodontics program requires satisfactory completion of a research project and results in a master's degree through the Marquette University Graduate School.

The master of science degree has two options: the traditional thesis option and the publication option. In partial fulfillment of the requirements to obtain the master of science degree, all residents must complete appropriate sections of the graduate core curriculum with a grade of B- or above, conduct a research project on an appropriate clinical or basic science topic, and successfully defend their research project. Format and content of the public defense is determined by the advisory committee.

Research projects are selected in consultation with the resident, and the graduate program director. Residents are encouraged to do clinically relevant research or pursue the application of scientific principles to the study of dental biomaterials including relationships among compositions, physical properties, and clinical properties.
Residents who choose the thesis option will have their research and thesis preparation supervised by a primary adviser and approved by a thesis advisory committee that consists of at least three members. The publication option, in addition, culminates in the acceptance of a first author, original, peer-reviewed publication based on a research project. Selection of the publication option requires completion of a traditional thesis in the event the submitted manuscript is not accepted for publication at least 60 days before the final day to submit your thesis, to the Graduate School with results and signatures. All graduate students are required to present their research formally.

Prosthodontics

Typical Three-Year Professional Phase - Master of Science

FIRST YEAR

Summer Term

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<tr>
<td>DENT 6999</td>
<td>Master's Thesis (1 Credit)</td>
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Spring Term

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<tr>
<td>PROS 6000</td>
<td>Clinical Patient Care- Prosthodontics</td>
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<tr>
<td>PROS 6202</td>
<td>Clinical Prosthodontics</td>
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<tr>
<td>PROS 6954</td>
<td>Seminar in Removable Partial Denture Prosthodontics</td>
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<tr>
<td>or PROS 6955</td>
<td>Seminar in Fixed Partial Denture Prosthodontics</td>
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<tr>
<td>PROS 6960</td>
<td>Seminar in Geriatric Dentistry (Taken once is any Spring Term (offered once every three years))</td>
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<tr>
<td>DENT 6003</td>
<td>Dental Graduate Didactic Core Curriculum 3 (Head and Neck Anatomy)</td>
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<tr>
<td>DENT 6003</td>
<td>Dental Graduate Didactic Core Curriculum 3 (Implantology)</td>
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<td>DENT 6003</td>
<td>Dental Graduate Didactic Core Curriculum 3 (Mineralized Tissues)</td>
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<td>DENT 6003</td>
<td>Dental Graduate Didactic Core Curriculum 3 (Oral Physiology)</td>
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<tr>
<td>DENT 6003</td>
<td>Dental Graduate Didactic Core Curriculum 3 (Practice Law/Jurisprudence)</td>
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<tr>
<td>DENT 6930</td>
<td>Special Topics in Dentistry (Perio Pros Treatment Planning)</td>
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SECOND YEAR
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### Fall Term

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<tr>
<td>PROS 6203</td>
<td>Clinical Prosthodontics 3</td>
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<tr>
<td>PROS 6953</td>
<td>Seminar in Complete Denture Prosthodontics (Odd Years)</td>
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<tr>
<td>or PROS 6958</td>
<td>Seminar in Occlusion/TMD</td>
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<tr>
<td>PROS 6956</td>
<td>Seminar in Maxillofacial Prosthetics and Related Disciplines (Odd Years)</td>
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<td>or PROS 6957</td>
<td>Seminar in Implant Prosthodontics</td>
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<tr>
<td>DENT 6002</td>
<td>Dental Graduate Didactic Core Curriculum 2 (Oral Microbiology (Odd Years) or Immunology (Even Years))</td>
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<td>DENT 6930</td>
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<td>PROS 6204</td>
<td>Clinical Prosthodontics 4</td>
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<tr>
<td>PROS 6954</td>
<td>Seminar in Removable Partial Denture Prosthodontics (Even Years)</td>
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<tr>
<td>or PROS 6955</td>
<td>Seminar in Fixed Partial Denture Prosthodontics</td>
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<tr>
<td>DENT 6003</td>
<td>Dental Graduate Didactic Core Curriculum 3 (Inflammation/Wound Healing)</td>
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<td>DENT 6003</td>
<td>Dental Graduate Didactic Core Curriculum 3 (Speech Pathology)</td>
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### THIRD YEAR

#### Fall Term

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<td>DENT 6953</td>
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### Dental Biomaterials Courses

**BIMA 6101. Mechanical Behavior of Dental Biomaterials. 3 cr. hrs.**

Basic principles of mechanics, elastic deformation, plastic deformation and fracture. Comparison of mechanical behavior of metallic, ceramic and polymer dental biomaterial systems. Discussion of tension, compression, shear, bending, torsion, hardness and impact tests for dental biomaterials. Includes laboratory exercises.

**BIMA 6102. Polymeric Dental Biomaterials. 2 cr. hrs.**

Compositions and properties of polymers utilized in prosthetic, restorative, orthodontic, preventive, and implant dentistry. The materials include poly (methyl methacrylate), BIS-GMA, polyurethane and polyvinyl products in the form of resins, composites and microfills polymerized by heat, chemicals and ultraviolet or visible lights. Includes laboratory exercises.

**BIMA 6151. Dental Cements. 2 cr. hrs.**

Compositions, setting reactions and properties of zinc phosphate, zinc oxide-eugenol, polycarboxylate, glass ionomer and resin dental cements. Effects of clinical variables and the ADA specifications related to these materials will be included. May include laboratory exercises.

**BIMA 6152. Dental Impression Materials. 2 cr. hrs.**

Classification, composition and properties of the various impression materials used in restorative and prosthetic dentistry. The material systems to be discussed include impression compound, hydrocolloids, polysulfides, polyethers and silicones. May include laboratory exercises.
**BIMA 6153. Dental Casting Procedures. 3 cr. hrs.**

**BIMA 6201. Dental Metallurgy 1. 3 cr. hrs.**
Theory and application of metallurgical principles to the study of dental alloy systems. Dental amalgams, noble and base metal casting alloys, and wrought alloys. Area and extent of study determined by individual needs of student. Includes laboratory exercises.

**BIMA 6202. Dental Metallurgy 2. 3 cr. hrs.**
See BIMA 6201.

**BIMA 6251. Dental Ceramics. 3 cr. hrs.**
Basic principles of ceramic structures and properties. History, properties and technology of dental porcelains, gypsum products and dental casting investments. Includes laboratory exercises.

**BIMA 6501. Advanced Experimental Techniques for Dental Biomaterials Research 1. 1 cr. hr.**
Biomaterials Research 1 laboratory courses. Topics may vary, but will generally include scanning electron microscopy, mechanical testing procedures, and X-ray diffraction. Prereq: Admission to graduate program in dental biomaterials.

**BIMA 6502. Advanced Experimental Techniques for Dental Biomaterials Research 2. 1 cr. hr.**
Biomaterials Research 2 laboratory courses. Topics may vary, but will generally include scanning electron microscopy, mechanical testing procedures, and X-ray diffraction. Prereq: Admission to graduate program in dental biomaterials.

**BIMA 6570. Biomaterials Science and Engineering. 3 cr. hrs.**
Basic and advanced principles of dental biomaterials science. Fundamental scientific principles, and physical, mechanical, chemical and biological properties of restorative and preventive dental biomaterials. Relationships between properties and clinical performance of these materials and methods used for testing them.

**BIMA 6601. Dental Biomaterials Literature Review 1. 1-3 cr. hrs.**
Discussion of current and classic literature in dental biomaterials. Topics and journals discussed are rotated to provide an overview and range of different materials, properties, and applications. Emphasizes class discussion and presentations. Prereq: Grad. stndg. in BIMA graduate program or cons. of dept.

**BIMA 6602. Dental Biomaterials Literature Review 2. 1-3 cr. hrs.**
See BIMA 6601. Prereq: Grad. stndg. in BIMA graduate program or cons. of dept.

**BIMA 6603. Dental Biomaterials Literature Review 3. 1-3 cr. hrs.**
See BIMA 6601. Prereq: Grad. stndg. in BIMA graduate program or cons. of dept.

**BIMA 6604. Dental Biomaterials Literature Review 4. 1-3 cr. hrs.**
See BIMA 6601. Prereq: Grad. stndg. in BIMA graduate program or cons. of dept.

**BIMA 6931. Topics in Dental Biomaterials. 1-3 cr. hrs.**
Practical laboratory exercises designed to provide the student with specific skill sets and analytic approaches used in modern materials research.

**BIMA 6970. Bioceramics and Biomaterials Seminar. 1 cr. hr.**
Current topics and concepts in materials science.

**BIMA 6980. Teaching Experience in Dental Biomaterials. 1-2 cr. hrs.**
Teaching and preclinical laboratory assignments in dental biomaterials for undergraduate dental students.

**BIMA 6995. Independent Study in Dental Biomaterials. 1-3 cr. hrs.**
Course work customized to meet specific student interests/needs. Prereq: Cons. of instr.

**BIMA 6999. Master's Thesis. 1-6 cr. hrs.**
Credit hours assigned to thesis preparation and scholarship. S/U grade assessment.

**BIMA 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.**
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

**BIMA 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.**
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

**BIMA 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.**
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

**BIMA 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.**
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Dentistry Courses

DENT 6001. Dental Graduate Didactic Core Curriculum 1. 1 cr. hr.
The Dental Graduate Didactic Core Curriculum (DENT 6001-6003) is designed to cover all didactic content areas applicable to the advanced practice of general dentistry and to each of the specialty areas of dentistry. The content areas are sequenced to present: material of interest for the general dentist seeking additional training beyond predoctoral dental education; material of interest for each of the dental specialty areas; and advanced material of interest for those intending to pursue academic/research careers.

DENT 6002. Dental Graduate Didactic Core Curriculum 2. 1 cr. hr.
The Dental Graduate Didactic Core Curriculum (DENT 6001-6003) is designed to cover all didactic content areas applicable to the advanced practice of general dentistry and to each of the specialty areas of dentistry. The content areas are sequenced to present: material of interest for the general dentist seeking additional training beyond predoctoral dental education; material of interest for each of the dental specialty areas; and advanced material of interest for those intending to pursue academic/research careers.

DENT 6003. Dental Graduate Didactic Core Curriculum 3. 1 cr. hr.
The Dental Graduate Didactic Core Curriculum (DENT 6001-6003) is designed to cover all didactic content areas applicable to the advanced practice of general dentistry and to each of the specialty areas of dentistry. The content areas are sequenced to present: material of interest for the general dentist seeking additional training beyond predoctoral dental education; material of interest for each of the dental specialty areas; and advanced material of interest for those intending to pursue academic/research careers.

ENDO 6930. Special Topics in Dentistry. 1-4 cr. hrs.
In consultation with the Office of the Registrar, may be offered as an experimental course to students, in order to evaluate and determine if a course should be incorporated into the regular curriculum of a program, or can also be used for courses that are in the curriculum approval process pipeline; however, are not yet officially approved; therefore cannot appear in the Bulletin. Once the same course has been offered twice as a Special Topic, it cannot be offered again until it moves through the curriculum approval process and is approved with a regular curriculum course number or one of the standard numbers below. This course number may not be used for a single student studying a particular subject matter.

DENT 6953. Seminar in Interdisciplinary Dentistry. 1 cr. hr.
Provides training in the discipline of clinical dentistry using a seminar format of content delivery. The postgraduate students learn the importance of interdisciplinary treatment of patients and enhance communication between all specialties in the Dental School. Focuses on case presentation skills, diagnostic and therapeutic decision making, outcomes assessment and knowledge of the relevant literature.

DENT 6980. Teaching Experience in Dentistry. 1 cr. hr.
Assigned teaching duties in the didactic, preclinical, and clinical dental sciences.

DENT 6995. Independent Study in Dentistry. 1-3 cr. hrs.
Customized to meet specific student interests/needs. Prereq: Cons. of instr.

DENT 6999. Master's Thesis. 1-6 cr. hrs.
Credit hours assigned to thesis preparation and scholarship. S/U grade assessment.

DENT 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

DENT 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

DENT 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

DENT 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

Endodontics Courses

ENDO 6000. Clinical Patient Care-Endodontics. 1-7 cr. hrs.
Designed to account for time dental graduate residents spend providing patient care. Ranges from 1-7 credit hours per term. S/U grade assessment.

ENDO 6001. Pulp Biology. 1 cr. hr.
Pulp biology is considered from the physiologic, anatomic, cellular and immunologic aspects. Also covers, in detail, neural and vascular components of the pulp tissues. Prereq: Admitted to Endodontics program.

ENDO 6002. Advanced Endodontology 1. 1 cr. hr.
Advanced endodontics follows in sequence from pulp biology and covers diagnostic and treatment aspects of endodontology. Prereq: Admitted to Endodontics program; and ENDO 6001.

ENDO 6003. Advanced Endodontology 2. 1 cr. hr.
Covers advanced instrumentation in endodontic therapy as well as pulpal regeneration techniques. Prereq: Admitted to Endodontics program; ENDO 6001 and ENDO 6002.
ENDO 6301. Endodontics Clinic and Case Review 1. 4 cr. hrs.
Complete diagnosis and treatment of clinic cases using all available diagnostic aids and treatment modalities. Endodontic surgical cases are performed. Clinical cases are presented for discussion. Prereq: Admitted to Endodontics program.

ENDO 6302. Endodontics Clinic and Case Review 2. 4 cr. hrs.
Continuation in clinic and case review series. Complete diagnosis and treatment of clinic cases using all available diagnostic aids and treatment modalities. Endodontic surgical cases are performed. Clinical cases are presented for discussion. Prereq: Admitted to Endodontics program.

ENDO 6303. Endodontics Clinic and Case Review 3. 6 cr. hrs.
Continuation in clinic and case review series. Complete diagnosis and treatment of clinic cases using all available diagnostic aids and treatment modalities. Endodontic surgical cases are performed. Clinical cases are presented for discussion. Prereq: Admitted to Endodontics program.

ENDO 6304. Endodontics Clinic and Case Review 4. 6 cr. hrs.
Continuation in clinic and case review series. Complete diagnosis and treatment of clinic cases using all available diagnostic aids and treatment modalities. Endodontic surgical cases are performed. Clinical cases are presented for discussion. Prereq: Admitted to Endodontics program.

ENDO 6371. Endodontics Literature and Book Review 1. 1 cr. hr.
Discussion of current and classic literature, library research; review current textbooks, conventions and dental meetings. Some lectures by graduate students relating endodontics to the other disciplines, systemic health and potential areas of research. Prereq: Admitted to Endodontics program.

ENDO 6372. Endodontics Literature and Book Review 2. 1 cr. hr.
Continuation in literature and book review series. Discussion of current and classic literature, library research; review current textbooks, conventions and dental meetings. Some lectures by graduate students relating endodontics to the other disciplines, systemic health and potential areas of research. Prereq: Admitted to Endodontics program.

ENDO 6373. Endodontics Literature and Book Review 3. 1 cr. hr.
Continuation in literature and book review series. Discussion of current and classic literature, library research; review current textbooks, conventions and dental meetings. Some lectures by graduate students relating endodontics to the other disciplines, systemic health and potential areas of research. Prereq: Admitted to Endodontics program.

ENDO 6374. Endodontics Literature and Book Review 4. 1 cr. hr.
Continuation in literature and book review series. Discussion of current and classic literature, library research; review current textbooks, conventions and dental meetings. Some lectures by graduate students relating endodontics to the other disciplines, systemic health and potential areas of research. Prereq: Admitted to Endodontics program.

Orthodontics Courses

ORTH 6000. Clinical Patient Care-Orthodontics. 1-7 cr. hrs.
Designed to account for time dental graduate residents spend providing patient care. Ranges from 1-7 credit hours per term. S/U grade assessment.

ORTH 6101. Clinical Orthodontics 1. 4 cr. hrs.
Lectures, laboratory and clinical treatment of patients with various types of malocclusion. Prereq: Admitted to Orthodontics program.

ORTH 6102. Clinical Orthodontics 2. 4 cr. hrs.
Lectures, laboratory and clinical treatment of patients with various types of malocclusion. Prereq: Admitted to Orthodontics program.

ORTH 6103. Clinical Orthodontics 3. 6 cr. hrs.
Lectures, laboratory and clinical treatment of patients with various types of malocclusion. Prereq: Admitted to Orthodontics program.

ORTH 6104. Clinical Orthodontics 4. 6 cr. hrs.
Lectures, laboratory and clinical treatment of patients with various types of malocclusion. Prereq: Admitted to Orthodontics program.

ORTH 6110. Histopathology of Tooth Movement. 1 cr. hr.
Histological and pathological aspects of tooth movement emphasizing tissue response to orthodontic forces. Prereq: Admitted to Orthodontics program.

ORTH 6953. Orthodontics Seminar 1. 1 cr. hr.
Combines basic/applied techniques and maintenance of normal occlusal development. Students learn the fabrication and biomechanics of various appliances used in prevention and interception of malocclusions. Concurrently, students are taught in the theory of normal occlusal development, diagnosis, prevention, and interception of certain malocclusions. Prereq: Admitted to Orthodontics program.

ORTH 6954. Orthodontics Seminar 2. 1 cr. hr.
A continuation of a series of courses beginning with ORTH 6953. Prereq: Admitted to Orthodontics program.

ORTH 6955. Orthodontics Seminar 3. 1 cr. hr.
A continuation of a series of courses beginning with ORTH 6953. Prereq: Admitted to Orthodontics program.

ORTH 6956. Orthodontics Seminar 4. 1 cr. hr.
A continuation of a series of courses beginning with ORTH 6953. Prereq: Admitted to Orthodontics program.

Periodontics Courses

PERI 6000. Clinical Patient Care-Periodontics. 1-7 cr. hrs.
Designed to account for time dental graduate residents spend providing patient care. Ranges from 1-7 credit hours per term. S/U grade assessment.
PERI 6411. Periodontics Clinic 1. 1 cr. hr.
The clinical program (first of six) develops competency to collect, organize, analyze, and interpret data to formulate a diagnosis, prognosis, and treatment plan for each patient. The resident discusses the rationale and indication of therapy, then critically evaluates the results of the therapy. The resident develops, implements, and evaluates a periodontal maintenance plan. Prereq: Admitted to the Periodontics program.

PERI 6412. Periodontics Clinic 2. 2 cr. hrs.
The clinical program (second of six) develops competency to collect, organize, analyze, and interpret data to formulate a diagnosis, prognosis, and treatment plan for each patient. The resident discusses the rationale and indication of therapy, then critically evaluates the results of the therapy. The resident develops, implements, and evaluates a periodontal maintenance plan. Prereq: Admitted to the Periodontics program.

PERI 6413. Periodontics Clinic 3. 2 cr. hrs.
The clinical program (third of six) develops competency to collect, organize, analyze, and interpret data to formulate a diagnosis, prognosis, and treatment plan for each patient. The resident discusses the rationale and indication of therapy, then critically evaluates the results of the therapy. The resident develops, implements, and evaluates a periodontal maintenance plan. Prereq: Admitted to the Periodontics program.

PERI 6414. Periodontics Clinic 4. 2 cr. hrs.
The clinical program (fourth of six) develops competency to collect, organize, analyze, and interpret data to formulate a diagnosis, prognosis, and treatment plan for each patient. The resident discusses the rationale and indication of therapy, then critically evaluates the results of the therapy. The resident develops, implements, and evaluates a periodontal maintenance plan. Prereq: Admitted to the Periodontics program.

PERI 6415. Periodontics Clinic 5. 4 cr. hrs.
The clinical program (fifth of six) develops competency to collect, organize, analyze, and interpret data to formulate a diagnosis, prognosis, and treatment plan for each patient. The resident discusses the rationale and indication of therapy, then critically evaluates the results of the therapy. The resident develops, implements, and evaluates a periodontal maintenance plan. Prereq: Admitted to the Periodontics program.

PERI 6416. Periodontics Clinic 6. 4 cr. hrs.
The clinical program (last of six) develops competency to collect, organize, analyze, and interpret data to formulate a diagnosis, prognosis, and treatment plan for each patient. The resident discusses the rationale and indication of therapy, then critically evaluates the results of the therapy. The resident develops, implements, and evaluates a periodontal maintenance plan. Prereq: Admitted to the Periodontics program.

PERI 6421. Advanced Moderate Sedation 1. 2 cr. hrs.
An in-depth, comprehensive assessment of pain control in dentistry (first of two). Begins with neuroanatomy and pain, then builds a valid foundation in basic science before advancing to a panoramic discussion of techniques in anxiety management and pain control. Emphasizes behavioral management and conscious sedation techniques review. Accompanied by demonstration, patient cases, and certification. Prereq: Admitted to the Periodontics program.

PERI 6422. Advanced Moderate Sedation 2. 2 cr. hrs.
An in-depth, comprehensive assessment of pain control in dentistry (last of two). Begins with neuroanatomy and pain, then builds a valid foundation in basic science before advancing to a panoramic discussion of techniques in anxiety management and pain control. Emphasizes behavioral management and conscious sedation techniques review. Accompanied by demonstration, patient cases, and certification. Prereq: Admitted to the Periodontics program.

PERI 6431. Endosseous Dental Implants 1. 1 cr. hr.
Concepts of dental implants (first of two). Examines the use of osseointegrated, root-form, endosseous implants, which has revolutionized the dental professional's ability to treatment plan and restore the partially and completely edentulous patient. Studies the historic, simple, advanced, and complex use of today's implants as well as site development and treatment of peri-implantitis. Prereq: Admitted to the Periodontics program.

PERI 6432. Endosseous Dental Implants 2. 1 cr. hr.
Concepts of dental implants (last of two). Examines the use of osseointegrated, root-form, endosseous implants, which has revolutionized the dental professional's ability to treatment plan and restore the partially and completely edentulous patient. Studies the historic, simple, advanced, and complex use of today's implants as well as site development and treatment of peri-implantitis. Prereq: Admitted to the Periodontics program.

PERI 6441. Supervised Teaching 1. 1 cr. hr.
Provides residents teaching experience (first of three). Residents, assigned to various clinics, develop their skills teaching clinical periodontology to predoctoral students. Periodontal faculty provide supervision and evaluation of teaching performance. Prereq: Admitted to the Periodontics program.

PERI 6442. Supervised Teaching 2. 1 cr. hr.
Provides residents teaching experience (second of three). Residents, assigned to various clinics, develop their skills teaching clinical periodontology to predoctoral students. Periodontal faculty provide supervision and evaluation of teaching performance. Prereq: Admitted to the Periodontics program.

PERI 6443. Supervised Teaching 3. 1 cr. hr.
Provides residents teaching experience (last of three). Residents, assigned to various clinics, develop their skills teaching clinical periodontology to predoctoral students. Periodontal faculty provide supervision and evaluation of teaching performance. Prereq: Admitted to the Periodontics program.

PERI 6953. Seminar in Periodontics 1. 2 cr. hrs.
In-depth review of current and classical literature, medical emergencies, periodontal lectures, case presentation, mock boards and an oral evaluation exam. Prereq: Admitted to the Periodontics program.

PERI 6954. Seminar in Periodontics 2. 2 cr. hrs.
A continuation of a series of courses beginning with PERI 6953. Prereq: Admitted to the Periodontics program.
PERI 6955. Seminar in Periodontics 3. 2 cr. hrs.
A continuation of a series of courses beginning with PERI 6953. Prereq: Admitted to the Periodontics program.

PERI 6956. Seminar in Periodontics 4. 2 cr. hrs.
A continuation of a series of courses beginning with PERI 6953. Prereq: Admitted to the Periodontics program.

PERI 6957. Seminar in Periodontics 5. 2 cr. hrs.
A continuation of a series of courses beginning with PERI 6953. Prereq: Admitted to the Periodontics program.

PERI 6958. Seminar in Periodontics 6. 2 cr. hrs.
A continuation of a series of courses beginning with PERI 6953. Prereq: Admitted to the Periodontics program.

**Prosthodontics Courses**

PROS 6000. Clinical Patient Care-Prosthodontics. 1-7 cr. hrs.
Designed to account for time dental graduate residents spend providing patient care. Ranges from 1-7 credit hours per term. S/U grade assessment.

PROS 6201. Clinical Prosthodontics 1. 4 cr. hrs.
Clinical treatment concepts in basic and advanced restorative procedures. Prereq: Admitted to Prosthodontics program.

PROS 6202. Clinical Prosthodontics 2. 4 cr. hrs.
Continuation of PROS clinic series. Clinical treatment concepts in basic and advanced restorative procedures. Prereq: PROS 6201, and admitted to Prosthodontics program.

PROS 6203. Clinical Prosthodontics 3. 4 cr. hrs.
Continuation of PROS clinic series. Clinical treatment concepts in basic and advanced restorative procedures. Prereq: PROS 6202, and admitted to Prosthodontics program.

PROS 6204. Clinical Prosthodontics 4. 4 cr. hrs.
Continuation of PROS clinic series. Clinical treatment concepts in basic and advanced restorative procedures. Prereq: PROS 6203, and admitted to Prosthodontics program.

PROS 6205. Clinical Prosthodontics 5. 6 cr. hrs.
Complete dentures, fixed and removable partial dentures, implant prosthodontics, maxillofacial prosthodontics and associated clinical disciplines of dentistry involved in comprehensive rehabilitation of the oral cavity. Prereq: PROS 6204, and admitted to Prosthodontics program.

PROS 6206. Clinical Prosthodontics 6. 6 cr. hrs.
Continuation of PROS 6205. Complete dentures, fixed and removable partial dentures, implant prosthodontics, maxillofacial prosthodontics and associated clinical disciplines of dentistry involved in comprehensive rehabilitation of the oral cavity. Prereq: PROS 6205, and admitted to Prosthodontics program.

PROS 6953. Seminar in Complete Denture Prosthodontics. 1 cr. hr.
In-depth review and discussion of complete denture literature and its theoretical, technical, and clinical application. Includes regularly-scheduled diagnosis and treatment planning sessions in all phases of prosthodontics. Prereq: Admitted to Prosthodontics program.

PROS 6954. Seminar in Removable Partial Denture Prosthodontics. 1 cr. hr.
In-depth review and discussion of removable partial dentures literature and its theoretical, technical, and clinical application. Includes regularly-scheduled diagnosis and treatment planning sessions in all phases of prosthodontics. Prereq: Admitted to Prosthodontics program.

PROS 6955. Seminar in Fixed Partial Denture Prosthodontics. 1 cr. hr.
In-depth review and discussion of fixed partial denture and rehabilitation literature, and its theoretical, technical, and clinical application. Includes regularly-scheduled diagnosis and treatment planning sessions in all phases of prosthodontics. Prereq: Admitted to Prosthodontics program.

PROS 6956. Seminar in Maxillofacial Prosthetics and Related Disciplines. 1 cr. hr.
In-depth literature review and discussion of theoretical, technical, and clinical application of maxillofacial prosthetics, surgical and radiation oncology, speech pathology, and other related disciplines. Includes regularly-scheduled diagnosis and treatment planning sessions in all phases of prosthodontics. Prereq: Admitted to Prosthodontics program.

PROS 6957. Seminar in Implant Prosthodontics. 1 cr. hr.
In-depth review and discussion of complete and partial fixed, single tooth and removable implant rehabilitation literature and its theoretical and clinical applications. Includes regularly-scheduled diagnosis and treatment sessions in all phases of prosthodontics. Prereq: Admitted to Prosthodontics program.

PROS 6958. Seminar in Occlusion/TMD. 1 cr. hr.
In-depth review and discussion of concepts of occlusion and articulation, occlusal analysis, diagnosis and treatment of facial pain and tempormandibular disorders. Includes regularly-scheduled diagnosis and treatment planning sessions in all phases of prosthodontics. Prereq: Admitted to Prosthodontics program.

PROS 6960. Seminar in Geriatric Dentistry. 1 cr. hr.
Educational Policy and Leadership (EDPL)

Chairperson: Leigh van den Kieboom, Ph.D.

Educational Policy and Leadership website (https://www.marquette.edu/grad/programs-education-graduate.php)

Degrees Offered
Master of Arts (M.A.); Master of Education (M.Ed.); Doctor of Philosophy; Certificate

Program Overview
The College of Education (https://www.marquette.edu/education/graduate/) is made up of two departments: Counselor Education and Counseling Psychology (CECP) and Educational Policy and Leadership (EDPL).

The Department of Educational Policy and Leadership offers programs that prepare graduate students to assume educational leadership roles in the areas of study provided by its programs and specializations. A distinctive characteristic of the programs is the commitment to the development of professionals as agents of critical inquiry and social justice. This is done through a systematic focus on the social, cultural, philosophical and historical contexts of education. The educational policy and leadership programs seek to apply the university goals of Christian commitment and scholarship to settings related to educational practice and policy, especially in public and private schools and institutions of higher education.

While Marquette University is concerned about the professional advancement of its students, facilitates the process of certification and provides excellent educational opportunities, it cautions that professional success in a chosen field requires, above all else, constant development of individual abilities, personal initiative and a professional sense of responsibility for fulfilling all one’s appropriate legal, ethical and other professional responsibilities. Hence, the university facilitates the licensure process for students pursuing careers in education and other human service fields, but students must also take responsibility for meeting all the requirements for licensure or certification in their chosen fields.

Master’s Programs
The goal of the master’s programs is to engage the professional educator in extended critical reflection on the principles, practices, and rationales of human-service leadership in contemporary society. Specifically, the programs seek to develop educational leaders in K-12 schools, colleges, universities and educational organizations with expertise in the historical, philosophical and sociological foundations of educational policy issues. The programs are designed to accommodate the working professional, and program content is composed to reflect student backgrounds, interests and professional objectives.

M.A. – Educational Policy and Foundations
The master of arts with a specialization in educational policy and foundations is designed for teachers and educational leaders who wish to combine the study of foundations in education with research in an area of interest.

M.Ed. – Educational Administration
The master of education with a specialization in educational administration invites students to pursue the critical study of organizational leadership in K-12 schools and to assume leadership roles in those settings. The program prepares students for either the Wisconsin Director of Instruction license or the Wisconsin Principal license.

M.Ed. – Student Affairs in Higher Education
The master of education with a specialization in student affairs in higher education prepares students for careers in settings such as: academic advising, career development centers, student unions, international student services, multicultural affairs, orientation programs, residential living programs, admissions and student organizations. The program includes course work in leadership, counseling, educational psychology and higher education.

M.Ed. – POST-BACCALAUREATE Elementary Education (MORATORIUM ON ADMISSIONS FOR NEW STUDENTS)
The master of education with a specialization in elementary education is designed for students with a bachelor’s degree who wish to earn an initial Wisconsin elementary/middle (middle childhood/early adolescence — grades 1-8) teaching license. This licensure to master’s program is aligned with the knowledge, skills and dispositions related to effective teaching and articulated in the Wisconsin State Teaching Standards for Licensure and Professional Development. Like Marquette’s undergraduate teacher preparation program, this program prepares teachers to uphold the Jesuit traditions of care for the person, social justice, academic excellence, ethical behavior and service to the urban community.

M.Ed. – POST-BACCALAUREATE Secondary Education (MORATORIUM ON ADMISSIONS FOR NEW STUDENTS)
The master of education with a specialization in secondary education is designed for students with a bachelor’s degree in biology, chemistry, economics, English, a foreign language, history, mathematics, physics, political science, psychology or sociology who wish to earn an initial Wisconsin middle/secondary (early adolescence/adolescence — grades 6-12) teaching license. This licensure to master’s program is aligned with the knowledge, skills and dispositions related to effective teaching and articulated in the Wisconsin State Teaching Standards for Licensure and Professional Development.
Like Marquette’s undergraduate teacher preparation program, this program prepares teachers to uphold the Jesuit traditions of care for the person, social justice, academic excellence, ethical behavior and service to the urban community.

**M.Ed. - Secondary Education - Science, Technology, Engineering and Mathematics**

A 14-month accelerated, master of education program in science, technology, engineering and math teaching designed for students with a bachelor’s degree in STEM seeking to earn an initial Wisconsin middle/secondary (early adolescence/adolescence – grades 6-12) teaching license. Students will take courses (30 credits) as a cohort over four sessions. During that time they will engage in teaching experiences based upon a field-based, co-operative education internship model. This will allow them to apply their coursework and theory directly to teaching experiences in the classroom.

**Certification Programs**

The College of Education offers a variety of certification programs which prepare students to obtain state certification and licensure. Certification program requirements are in alignment with requirements for educational licensure through the Wisconsin Department of Public Instruction. Certificates are granted by the Wisconsin Department of Public Instruction. The university’s decisions on recommendations for certification are made by its licensing officer after appropriate consultations and requirement reviews.

**Administrative Licensure Certification**

Certification programs are available for the Wisconsin Director of Instruction, Principal and Superintendent licenses. Licensed teachers who wish to acquire a principal or director of instruction license may also do so in conjunction with the master of education in educational administration. Note the superintendent certification is not eligible for Title IV federal aid.

**Teaching Certification (MORATORIUM ON ADMISSIONS FOR NEW STUDENTS)**

Certification programs are available for Wisconsin teaching licensure at the middle childhood/early adolescence level (elementary/middle) or the early adolescence/adolescence level (middle/secondary). Students can earn either license alone or in conjunction with a master of education degree.

**Doctoral Program**

The EDPL doctoral program develops educational scholar-practitioners, researchers, and leaders who possess the commitment, perspective, and skills to implement strategies for greater equity in a variety of educational settings. Students inquire deeply into the foundational knowledge of education, exploring how the organization of schools, institutions of higher education, and society shape educational processes. Students gain theoretical knowledge in specific disciplinary/topical concentrations, enabling them to further examine educational practice in a chosen context. Finally, students acquire expertise in research methods which equip them to advance and enact educational knowledge. The program supports EDPL Ph.D. graduates to work actively to create a more just society.

**Applying to the Master’s Programs**

**Application Deadlines**

Please note that deadlines by which all application materials must be received may vary based on degree and/or specialization.

- **M.Ed. with specialization in Student Affairs in Higher Education:**
  - January 15 for consideration in Interview Day for graduate assistantships;
  - February 15 for consideration for all other types of merit-based financial aid;
  - July 15 for all other applicants.

  This program starts in the fall term.

- **M.Ed. with specialization in Educational Administration:**
  - March 31 is the priority deadline for summer admission (normal program start); applications received after this date are considered as space permits.
  - Applications should be received no later than July 15 for consideration for admission for the fall term, if space allows.

- **M.A. with specialization in Educational Policy and Foundations:**
  - January 15 for priority consideration for fall admission;
  - July 15 deadline for all other fall applications;
  - November 15 for spring applications.

**Application Requirements for Master’s Programs**

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette. Transcripts must include proof of earned bachelor’s degree.¹
3. Three letters of recommendation addressing the applicant’s ability to do graduate-level work.
4. A personal statement of purpose that includes professional and academic goals.
5. A resume that includes professional and educational experiences.
6. GRE scores (General Test only; scores must be received by application deadline). Waived for individuals applying to the educational administration specialization and the student affairs in higher education specialization.
7. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

An interview and/or writing test may be required of applicants following the initial screening.

Teacher certification applicants are required to undergo a criminal background check, conducted by Marquette University. A second criminal background check is conducted at the state level when student teaching is completed, as part of the teacher license application.

Individuals submitting applications for administrative licenses must undergo a criminal background check, conducted by the state, when their administrative program is complete and they submit their administrative license application to the state.

1 Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

Prerequisites for Admission to Master’s Programs
Applicants should have graduated with a minimum of a bachelor’s degree from an accredited institution appropriate to their chosen field of graduate study.

Applying to the Post-Baccalaureate Teacher Certification Programs
(MORATORIUM ON ADMISSIONS FOR NEW STUDENTS)

All applicants seeking teacher certification must have transcripts evaluated by the College of Education before formally applying to the Graduate School for admission to any teacher certification program. Only upon approval of the department should students submit application materials to the Graduate School. Students seeking an advanced degree and certification must meet the criteria for both admission to the Office of Teacher Education and the Graduate School.

All inquiries concerning certification should be directed to the College of Education Graduate Office, located at Schroeder Health and Education Complex, 146, P.O. Box 1881, Milwaukee, WI 53201-1881, or via telephone at (414) 288-4613.

APPLICATION DEADLINES
For all certification programs: March 31 is the priority deadline for summer admission; applications received after this date are considered as space permits. Applications should be received no later than July 15 for consideration for admission for the fall term, if space allows.

Application Requirements for TEACHER Certification Applicants
After having transcripts evaluated by the College of Education, applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette. Transcripts must include proof of earned bachelor's degree.1
3. Three letters of recommendation addressing the applicant’s ability to do graduate-level work.
4. A personal statement of purpose that includes professional and academic goals.
5. A resume that includes professional and educational experiences.
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

An interview and/or writing test may be required of applicants following the initial screening.

Teacher certification applicants are required to undergo a criminal background check conducted by Marquette University. A second criminal background check is conducted at the state level when student teaching is completed, as part of the teacher license application.

1 Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

Applying to the Administrative Certification Programs
Applicants seeking a master’s degree and principal or director of instruction certification must meet the criteria for both admission to the Office of Teacher Education and the Graduate School. Before applying to an administrative certification program, individuals must have at least a bachelor's
degree from an accredited college or university with a minimum grade point average of 3.000 on a 4.000 point scale, along with one year of teaching experience.

All inquiries concerning certification should be directed to the College of Education Graduate Office, located at Schroeder Health and Education Complex, 146, P.O. Box 1881, Milwaukee, WI 53201-1881, or via telephone at (414) 288-4613.

**APPLICATION DEADLINES**

For all certification programs: March 31 is the priority deadline for summer admission; applications received after this date are considered as space permits. Applications should be received no later than July 15 for consideration for admission for the fall term, if space allows.

**Application Requirements for ADMINISTRATIVE Certification Applicants**

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.
3. Three letters of recommendation addressing the applicant’s ability to do graduate-level work.
4. A personal statement of purpose that includes professional and academic goals.
5. A resume that includes professional and educational experiences.
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

An interview and/or writing test may be required of applicants following the initial screening.

When their administrative program is complete and they submit their administrative license applications to the state, individuals must have a Wisconsin teacher license and three years of teaching experience. They must also undergo a criminal background check conducted by the state.

Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

**APPLYING TO THE DOCTORAL PROGRAM**

The doctoral program is designed to foster the development of scholar-practitioners. It asks students not only to inquire deeply into the process of teaching and learning, but also into how the organization of schooling shapes this process. In addition, the program asks students to acquire adjacent disciplinary strengths that provide contexts for considering what knowledge is of most worth, how forms of knowledge are socially distributed and what educational measures might help bring about a more just society. Students are expected to gain expertise in research that will enable them to contribute to the ways we think about education, and they are expected to develop technological and other practical skills that will enable them to implement strategies for change.

**Prerequisites for Admission**

Applicants should have graduated with, or be about to graduate with, a master’s degree or other professional degree such as J.D. or M.D. from an accredited institution appropriate to their chosen field of graduate study. The exceptional student applying to the doctoral program without a master’s degree, if accepted, must complete an appropriate master’s degree as part of his or her doctoral program requirements.

**Application Deadline**

Applicant files must be completed by Jan. 15 for admission consideration to the doctoral program. Applicants are notified by March 15.

**Application Requirements for Doctoral Program**

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.
3. Three letters of recommendation addressing the applicant’s ability to do graduate-level work.
4. GRE scores (scores MUST be received by application deadline – Jan. 15).
5. A sample of scholarly writing, such as a master’s thesis or a published article.
6. A personal statement articulating research interests with professional aspirations.
7. A resume that includes professional and educational experience.
8. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

An interview and/or writing test may be required of applicants following the initial screening.
Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

**Educational Policy and Leadership Master of Arts (M.A.) Requirements**

**Specialization:** Educational Policy and Foundations

A master’s program is arranged in consultation with the student’s assigned adviser. The program of study should be submitted for approval to the director of graduate studies no later than the end of the first term. Where licensure is involved, the program is designed to meet Wisconsin requirements.

**Educational Policy and Foundations**

The master of arts degree in educational policy and leadership with a specialization in educational policy and foundations requires students to complete 33 credit hours of course work and complete a capstone research project.

Required Foundation courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 6330</td>
<td>Sociological Foundations of Education</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6730</td>
<td>History of Education in the United States</td>
<td>3</td>
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</table>

Additional Foundation - two courses chosen from the following: 6

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 6200</td>
<td>Student Development in Higher Education</td>
</tr>
<tr>
<td>EDPL 6250</td>
<td>History of Higher Education in the United States</td>
</tr>
<tr>
<td>EDPL 6360</td>
<td>Lifespan Development</td>
</tr>
<tr>
<td>EDPL 6445</td>
<td>Learning and Curriculum Theories</td>
</tr>
<tr>
<td>EDPL 6450</td>
<td>Theories of Learning Applied to Instruction</td>
</tr>
<tr>
<td>EDPL 6700</td>
<td>Organizational Theory and Administration in K-12 Schools</td>
</tr>
<tr>
<td>EDPL 6712</td>
<td>Politics and Community Relations in Educational Organizations</td>
</tr>
<tr>
<td>EDPL 6800</td>
<td>American Law and the Educational Organization</td>
</tr>
<tr>
<td>EDPL 6860</td>
<td>Instructional Leadership</td>
</tr>
<tr>
<td>EDUC 6340</td>
<td>Child and Adolescent Development</td>
</tr>
</tbody>
</table>

Required Research courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 6000</td>
<td>Introduction to Educational Inquiry</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6997</td>
<td>Capstone in Educational Policy and Leadership</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives - five courses chosen from the following, not used to fulfill previous requirements: 15

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 6140</td>
<td>Diversity, Identity and the Student Affairs Professional</td>
</tr>
<tr>
<td>EDPL 6200</td>
<td>Student Development in Higher Education</td>
</tr>
<tr>
<td>EDPL 6210</td>
<td>Environmental Theory Assessment in Higher Education</td>
</tr>
<tr>
<td>EDPL 6250</td>
<td>History of Higher Education in the United States</td>
</tr>
<tr>
<td>EDPL 6260</td>
<td>Organizational Theory and Administration in Higher Education</td>
</tr>
<tr>
<td>EDPL 6310</td>
<td>Contemporary Philosophies of Education</td>
</tr>
<tr>
<td>EDPL 6445</td>
<td>Learning and Curriculum Theories</td>
</tr>
<tr>
<td>EDPL 6450</td>
<td>Theories of Learning Applied to Instruction</td>
</tr>
<tr>
<td>EDPL 6680</td>
<td>Designing and Teaching Effective Courses in Higher Education</td>
</tr>
<tr>
<td>EDPL 6700</td>
<td>Organizational Theory and Administration in K-12 Schools</td>
</tr>
<tr>
<td>EDPL 6712</td>
<td>Politics and Community Relations in Educational Organizations</td>
</tr>
<tr>
<td>EDPL 6750</td>
<td>The Principalship</td>
</tr>
<tr>
<td>EDPL 6800</td>
<td>American Law and the Educational Organization</td>
</tr>
<tr>
<td>EDPL 6860</td>
<td>Instructional Leadership</td>
</tr>
<tr>
<td>EDPL 6870</td>
<td>Curriculum Leadership</td>
</tr>
<tr>
<td>EDPL 6953</td>
<td>Seminar in Analysis of Teaching</td>
</tr>
</tbody>
</table>

Total Credit Hours 33

1 Or equivalent.
Educational Policy and Leadership Master of Education (M.Ed.) Requirements

Specializations: Educational Administration; Elementary Education (Moratorium on admissions for new students); Secondary Education (Moratorium on admissions for new students); Secondary Education - Science, Technology, Engineering and Mathematics; Student Affairs in Higher Education

Educational Administration

The master of education degree in educational administration requires students to complete 33 credit hours of coursework and complete a leadership portfolio. Students complete all required courses and additional coursework in either the principal or director of instruction options.

Required Courses for Principal Licensure (33 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 6000</td>
<td>Introduction to Educational Inquiry</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6700</td>
<td>Organizational Theory and Administration in K-12 Schools</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6712</td>
<td>Politics and Community Relations in Educational Organizations</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6720</td>
<td>Business Administration of the Educational Organization</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6730</td>
<td>History of Education in the United States</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6800</td>
<td>American Law and the Educational Organization</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6860</td>
<td>Instructional Leadership</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6870</td>
<td>Curriculum Leadership</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6997</td>
<td>Capstone in Educational Policy and Leadership</td>
<td>3</td>
</tr>
</tbody>
</table>

Courses specific to Principal Licensure:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 6750</td>
<td>The Principalship</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6980</td>
<td>Principalship Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours 33

REQUIRED COURSES FOR Director of Instruction LICENSURE (33 CREDITS)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 6000</td>
<td>Introduction to Educational Inquiry</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6700</td>
<td>Organizational Theory and Administration in K-12 Schools</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6712</td>
<td>Politics and Community Relations in Educational Organizations</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6720</td>
<td>Business Administration of the Educational Organization</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6730</td>
<td>History of Education in the United States</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6800</td>
<td>American Law and the Educational Organization</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6860</td>
<td>Instructional Leadership</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6870</td>
<td>Curriculum Leadership</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6997</td>
<td>Capstone in Educational Policy and Leadership</td>
<td>3</td>
</tr>
</tbody>
</table>

Courses specific to Director of Instruction Licensure:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 6445</td>
<td>Learning and Curriculum Theories</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6985</td>
<td>Director of Instruction Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours 33

Elementary Education

MORATORIUM ON ADMISSIONS FOR NEW STUDENTS

The master of education degree in elementary education requires students to complete 38 credit hours of coursework. This includes one term of full-time student teaching.

Undergraduate Prerequisites

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 1964</td>
<td>Teaching Elementary Mathematics</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 2001</td>
<td>Teaching Practice 1: Instructional Design and Teaching Models</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2330</td>
<td>Integrating the Arts Across the Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2964</td>
<td>Teaching Middle School Mathematics</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 4347</td>
<td>Teaching Elementary Reading, Language Arts, and Children's Literature</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credit Hours 12
## Required Graduate Courses (38 Credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 5000</td>
<td>Educational Inquiry 2: Advanced Topics</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5217</td>
<td>Educating Exceptional Learners</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5297</td>
<td>Teaching in the Middle School</td>
<td>4</td>
</tr>
<tr>
<td>EDUC 5317</td>
<td>Teaching Elementary Level Science</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5337</td>
<td>Teaching Elementary Social Studies</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5357</td>
<td>Teaching Elementary Reading, Language Arts, and Children's Literature 2</td>
<td>4</td>
</tr>
<tr>
<td>EDUC 6340</td>
<td>Child and Adolescent Development</td>
<td>3</td>
</tr>
<tr>
<td>or EDPL 6360</td>
<td>Lifespan Development</td>
<td></td>
</tr>
<tr>
<td>EDUC 6966</td>
<td>Elementary/Middle Education Practicum</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>One of the following:</td>
<td></td>
</tr>
<tr>
<td>EDUC 5540</td>
<td>Philosophy of Education</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6330</td>
<td>Sociological Foundations of Education</td>
<td></td>
</tr>
<tr>
<td>EDPL 6730</td>
<td>History of Education in the United States</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Three additional graduate-level course electives:</td>
<td>9</td>
</tr>
<tr>
<td>EDPL 6000</td>
<td>Introduction to Educational Inquiry</td>
<td></td>
</tr>
<tr>
<td>EDPL 6445</td>
<td>Learning and Curriculum Theories</td>
<td></td>
</tr>
<tr>
<td>EDPL 6450</td>
<td>Theories of Learning Applied to Instruction</td>
<td></td>
</tr>
<tr>
<td>EDPL 6700</td>
<td>Organizational Theory and Administration in K-12 Schools</td>
<td></td>
</tr>
<tr>
<td>EDPL 6712</td>
<td>Politics and Community Relations in Educational Organizations</td>
<td></td>
</tr>
<tr>
<td>EDPL 6800</td>
<td>American Law and the Educational Organization</td>
<td></td>
</tr>
<tr>
<td>EDPL 6860</td>
<td>Instructional Leadership</td>
<td></td>
</tr>
<tr>
<td>EDPL 6870</td>
<td>Curriculum Leadership</td>
<td></td>
</tr>
<tr>
<td>EDPL 6953</td>
<td>Seminar in Analysis of Teaching</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hours**: 38

---

1. A minimum of 33 credits must be completed at the graduate level for the master's degree. Course work completed at the undergraduate level (either at Marquette or at another institution) may reduce course requirements in this program. If some or all of the undergraduate prerequisites need to be satisfied, students must complete up to 50 credits for this degree.

**Note:** A transcript analysis determines whether additional math courses are required.

## Secondary Education

**MORATORIUM ON ADMISSIONS FOR NEW STUDENTS**

The master of education degree in secondary education requires students to complete 34 credit hours of course work. This includes one term of full-time student teaching.

### Undergraduate Prerequisites

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 2001</td>
<td>Teaching Practice 1: Instructional Design and Teaching Models</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credit Hours**: 3

### Required Courses (34 Credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 5000</td>
<td>Educational Inquiry 2: Advanced Topics</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5037</td>
<td>Literacy in the Content Areas</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5217</td>
<td>Educating Exceptional Learners</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5297</td>
<td>Teaching in the Middle School</td>
<td>4</td>
</tr>
<tr>
<td>EDUC 6340</td>
<td>Child and Adolescent Development</td>
<td>3</td>
</tr>
<tr>
<td>or EDPL 6360</td>
<td>Lifespan Development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One of the following courses:</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5540</td>
<td>Philosophy of Education</td>
<td></td>
</tr>
<tr>
<td>EDPL 6330</td>
<td>Sociological Foundations of Education</td>
<td></td>
</tr>
<tr>
<td>EDPL 6730</td>
<td>History of Education in the United States</td>
<td></td>
</tr>
</tbody>
</table>

**One additional Advanced Methods course:**

---
EDUC 5007  Teaching Middle/Secondary Social Science
EDUC 5017  Teaching Middle/Secondary Science
EDUC 5027  Teaching English in the Secondary School
LLAC 5000  Teaching World Languages and Cultures
MSSC 5020  The Teaching of Mathematics

or Advanced Methods in Journalism, Communication or Theatre
EDUC 6965  Middle/Secondary Education Practicum 3

Three additional graduate-level course electives: 9

EDPL 6000  Introduction to Educational Inquiry
EDPL 6445  Learning and Curriculum Theories
EDPL 6450  Theories of Learning Applied to Instruction
EDPL 6700  Organizational Theory and Administration in K-12 Schools
EDPL 6712  Politics and Community Relations in Educational Organizations
EDPL 6800  American Law and the Educational Organization
EDPL 6860  Instructional Leadership
EDPL 6870  Curriculum Leadership
EDPL 6953  Seminar in Analysis of Teaching

Total Credit Hours 34

1 Course work completed at the undergraduate level (either at Marquette or at another institution) may reduce course requirements in this program. A minimum of 33 credits must be completed at the graduate level for the master’s degree.

Prerequisite Course Work

Based on an analysis of the transcript, students may be required to complete additional course work in their content area of certification to meet Wisconsin Department of Public Instruction certification requirements.

Secondary Education - Science, Technology, Engineering and Mathematics

The master of education degree in secondary STEM education requires students to complete 30 credit hours of course work.

EDUC 6971  Introduction to Teaching and Learning 6
EDUC 6972  Integrated STEM Methods 9
EDUC 6973  Teacher Practice 9
EDUC 6974  Professional Practice 6

Total Credit Hours 30

Student Affairs in Higher Education

The master of education degree in student affairs in higher education requires students to complete 36 credits of course work and complete a professional capstone project.

Required Courses (36 credits)

EDPL 6000  Introduction to Educational Inquiry 3
EDPL 6100  Introduction to Student Affairs 3
EDPL 6130  Counseling Skills for Student Affairs Professionals 3
EDPL 6140  Diversity, Identity and the Student Affairs Professional 3
EDPL 6200  Student Development in Higher Education 3
EDPL 6210  Environmental Theory Assessment in Higher Education 3
EDPL 6250  History of Higher Education in the United States 3
EDPL 6260  Organizational Theory and Administration in Higher Education 3
EDPL 6800  American Law and the Educational Organization 3
EDPL 6965  Practicum in Student Affairs Leadership 1 3
EDPL 6966  Practicum in Student Affairs Leadership 2 3
EDPL 6997  Capstone in Educational Policy and Leadership 3

Total Credit Hours 36
Students who are waived from the second practicum course must choose a 3-credit elective in an area of interest.

**Educational Policy and Leadership Doctoral Requirements**

A Marquette doctoral student must complete a 57-credit program of study prepared in consultation with his or her adviser and outlined on an approved Doctoral Program Planning Form. The program must include an earned master’s degree of 30 credit hours, an additional 45 credit hours of course work, and 12 credit hours of dissertation course work.

**Transferring Credits from master’s programs:**

- A maximum of 15 master’s credits can be considered for transfer from another institution.
- Additional master’s credits may be considered for transfer from a closely related Marquette University master’s degree program.

In both cases, the transfer of credits is considered on a case-by-case basis by the student’s adviser and/or the Doctoral Program Committee based on the following factors:

1. EDPL courses listed as requirements or electives in the doctoral program description can be accepted for transfer given adequate student performance;
2. Level of theoretical course content for courses not listed in the program;
3. Student performance in transfer course.

In all cases, should the adviser and/or Doctoral Program Committee determine a student is not sufficiently prepared to begin dissertation research upon completion of course work, EDPL reserves the right to require the student to take appropriate course/s toward completion of the doctoral degree.

A doctoral program must contain the following elements:

<table>
<thead>
<tr>
<th>Foundation Courses</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 8330</td>
<td>Sociological Foundations of Education</td>
</tr>
<tr>
<td>EDPL 8730</td>
<td>History of Education in the United States</td>
</tr>
<tr>
<td>EDPL 8955</td>
<td>Seminar Social Contexts and Educational Policy 1</td>
</tr>
<tr>
<td>EDPL 8956</td>
<td>Seminar Social Contexts and Educational Policy 2</td>
</tr>
</tbody>
</table>

**Foundation Elective course - choose one of the following:**

- EDPL 8250: History of Higher Education in the United States
- EDPL 8300: Classics in the Philosophy of Education
- EDPL 8310: Contemporary Philosophies of Education
- EDPL 8445: Learning and Curriculum Theories
- EDPL 8700: Organizational Theory and Administration in K-12 Schools
- EDPL 8710: Multiple Paradigms in Educational Research
- EDPL 8712: Politics and Community Relations in Educational Organizations
- EDPL 8715: Interpretive and Critical Research in Education 1
- EDPL 8860: Instructional Leadership
- EDPL 8870: Curriculum Leadership

<table>
<thead>
<tr>
<th>Research Courses</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 8720</td>
<td>Interpretive and Critical Research in Education 2 (or 2nd Quantitative Methods)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electives (Chosen from areas of focus below)</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 8999</td>
<td>Doctoral Dissertation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dissertation Course work</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 8999</td>
<td>Doctoral Dissertation</td>
</tr>
</tbody>
</table>

| Total Credit Hours | 57 |

Students interested in pursuing a focus in the area of **K-12/higher education leadership** may select from the following electives:

<table>
<thead>
<tr>
<th>Electives, K-12/Higher Education Leadership</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 6140</td>
<td>Diversity, Identity and the Student Affairs Professional</td>
</tr>
<tr>
<td>EDPL 6200</td>
<td>Student Development in Higher Education</td>
</tr>
<tr>
<td>EDPL 8250</td>
<td>History of Higher Education in the United States</td>
</tr>
<tr>
<td>EDPL 8310</td>
<td>Contemporary Philosophies of Education</td>
</tr>
<tr>
<td>EDPL 8700</td>
<td>Organizational Theory and Administration in K-12 Schools (recommended)</td>
</tr>
</tbody>
</table>
EDPL 8712  Politics and Community Relations in Educational Organizations (recommended)
EDPL 8800  American Law and the Educational Organization
EDPL 8860  Instructional Leadership
EDPL 8870  Curriculum Leadership

Total Credit Hours  18

Students interested in pursuing a focus in the area of **K-12/higher education teaching and learning** may select from the following electives:

**Electives, K-12/Higher Education Teaching and Learning**  18

- EDPL 6140  Diversity, Identity and the Student Affairs Professional
- EDPL 6200  Student Development in Higher Education
- EDPL 8310  Contemporary Philosophies of Education
- EDPL 8445  Learning and Curriculum Theories
- EDPL 8450  Theories of Learning Applied to Instruction (recommended)
- EDPL 8800  American Law and the Educational Organization
- EDPL 8860  Instructional Leadership
- EDPL 8870  Curriculum Leadership (recommended)

Total Credit Hours  18

Students interested in pursuing a focus in the area of **K-12/higher education policy analysis** may select from the following electives:

**Electives, K-12/Higher Education Policy Analysis**  18

- COPS 8320  Measurement and Evaluation
- EDPL 8260  Organizational Theory and Administration in Higher Education
- EDPL 8310  Contemporary Philosophies of Education
- EDPL 8700  Organizational Theory and Administration in K-12 Schools
- EDPL 8712  Politics and Community Relations in Educational Organizations
- EDPL 8800  American Law and the Educational Organization
- POSC 5281  Urban Public Policy (recommended)
- POSC 6954  Research Seminar in American Politics (recommended)

Total Credit Hours  18

Students may also create a customized set of electives with the approval of their adviser.

Normally, no second language is required, unless, at the discretion of the student’s adviser, proficiency in a second language is necessary in a student’s research.

A doctoral student must pass all three parts of a written and oral qualifying exam prior to the advancement to candidacy. DQE Component 1: Critical Analysis and DQE Component 2: Foundations of Research are completed during course work. DQE Component 3: Proposal, both written and oral defense, is taken after the completion of course work. A student’s DQE Component 3 committee and the dissertation committee (typically the same members) should include at least two faculty from the EDPL department. The remaining members may be from outside the department with no more than one coming from outside the university. Students should select all committee members in consultation with their adviser.

The doctoral dissertation must represent an original research contribution and show high attainment and clear ability to do independent research. Students must successfully defend both their dissertation proposal and the final dissertation.

**Director of Instruction Certificate Requirements**

This certificate program is designed for licensed teachers interested in the Director of Instruction license in the state of Wisconsin and requires students to complete 30 credit hours of course work.

**Prerequisites for Licensure:**
- Wisconsin Teaching license
- Master’s degree
- Licensed teaching experience

**Required Courses (30 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 6000</td>
<td>Introduction to Educational Inquiry</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6445</td>
<td>Learning and Curriculum Theories</td>
<td>3</td>
</tr>
</tbody>
</table>
Elementary Education Certificate Requirements

MORATORIUM ON ADMISSIONS FOR NEW STUDENTS

This certificate program is designed to meet the needs of adults with a certifiable bachelor’s degree who wish to earn an initial Wisconsin middle childhood/early adolescence (grades 1-8) teaching license and requires students to complete a minimum of 20-23 credit hours\(^1\) of graduate-level course work.

**Undergraduate Prerequisites:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 1964</td>
<td>Teaching Elementary Mathematics</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 2001</td>
<td>Teaching Practice 1: Instructional Design and Teaching Models</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2330</td>
<td>Integrating the Arts Across the Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2964</td>
<td>Teaching Middle School Mathematics</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 4347</td>
<td>Teaching Elementary Reading, Language Arts, and Children's Literature 1</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credit Hours: 12

**Graduate Courses (20-23 credits):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 5000</td>
<td>Educational Inquiry 2: Advanced Topics</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5217</td>
<td>Educating Exceptional Learners</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5297</td>
<td>Teaching in the Middle School</td>
<td>4</td>
</tr>
<tr>
<td>EDUC 5357</td>
<td>Teaching Elementary Reading, Language Arts, and Children's Literature 2</td>
<td>4</td>
</tr>
<tr>
<td>EDPL 6360</td>
<td>Lifespan Development</td>
<td>3</td>
</tr>
<tr>
<td>or EDUC 6340</td>
<td>Child and Adolescent Development</td>
<td></td>
</tr>
<tr>
<td>EDUC 6966</td>
<td>Elementary/Middle Education Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>

One of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 5540</td>
<td>Philosophy of Education</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6730</td>
<td>History of Education in the United States</td>
<td></td>
</tr>
<tr>
<td>EDPL 6330</td>
<td>Sociological Foundations of Education</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours: 23

1 Wisconsin middle childhood/early adolescence (grades 1-8) teaching license requires students to complete 20-35 credit hours of course work, depending on background and/or equivalent course work completed (either at Marquette or at another institution).

**Note:** A transcript analysis determines whether additional math courses are required.

If a student in the certification program should decide at a later time to pursue the master of education, the College of Education will apply earned credits toward the pursuit of the master of education, as long as it is within 6 years from the start of the initial certification program.

**Principal Certificate Requirements**

This certificate program is designed for licensed teachers interested in the Principal license in the state of Wisconsin and requires students to complete 30 credit hours of course work.

**Prerequisites for Licensure:**

- Wisconsin Teaching license
- Master’s degree
- Licensed teaching experience
## Required Courses (30 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 6000</td>
<td>Introduction to Educational Inquiry</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6700</td>
<td>Organizational Theory and Administration in K-12 Schools</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6712</td>
<td>Politics and Community Relations in Educational Organizations</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6720</td>
<td>Business Administration of the Educational Organization</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6730</td>
<td>History of Education in the United States</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6750</td>
<td>The Principalship</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6800</td>
<td>American Law and the Educational Organization</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6860</td>
<td>Instructional Leadership</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6870</td>
<td>Curriculum Leadership</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6980</td>
<td>Principalship Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credit Hours** 30

## Secondary Education Certificate Requirements

### MORATORIUM ON ADMISSIONS FOR NEW STUDENTS

This certificate program is designed to meet the needs of the working professional with a bachelor's degree who wish to earn an initial Wisconsin early adolescence/adolescence (grades 6-12) teaching license and requires students to complete 15-25 credit hours\(^1\) of course work.

### Undergraduate Prerequisite

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 2001</td>
<td>Teaching Practice 1: Instructional Design and Teaching Models</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credit Hours** 3

### Required Courses (15-25 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 5000</td>
<td>Educational Inquiry 2: Advanced Topics</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6360</td>
<td>Lifespan Development</td>
<td>3</td>
</tr>
<tr>
<td>or EDUC 6340</td>
<td>Child and Adolescent Development</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5217</td>
<td>Educating Exceptional Learners</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5037</td>
<td>Literacy in the Content Areas</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 5297</td>
<td>Teaching in the Middle School</td>
<td>4</td>
</tr>
<tr>
<td>EDUC 6965</td>
<td>Middle/Secondary Education Practicum</td>
<td>3</td>
</tr>
<tr>
<td>One of the following courses:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EDUC 5540</td>
<td>Philosophy of Education</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6730</td>
<td>History of Education in the United States</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 6330</td>
<td>Sociological Foundations of Education</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credit Hours** 25

\(^1\) Depending on background and/or equivalent course work completed (either at Marquette or at another institution).

### Prerequisite Course Work

Based on an analysis of the transcript, students may be required to complete additional course work in their content area of certification to meet Wisconsin Department of Public Instruction certification requirements.

**Note:** If a student in the certification program should decide at a later time to pursue the master of education, the College of Education can apply earned credits toward the pursuit of the master of education, as long as it is within 6 years from the start of the initial certification program.
Superintendent Certificate Requirements

This certificate program is designed for licensed teachers interested in the Superintendent license in the state of Wisconsin and requires students to complete 27 credit hours of course work. This program is not eligible for Title IV federal aid.

Prerequisites:
- Wisconsin Teaching license
- Three years of teaching experience
- Master’s degree
- Principal license
- Human development course

Required Courses (24 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDPL 8000</td>
<td>The Superintendency</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 8010</td>
<td>Advanced Personnel Leadership</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 8020</td>
<td>Advanced Politics and Community Relations in Educational Organizations</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 8030</td>
<td>Advanced Theory and Practice in Educational Finance</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 8040</td>
<td>Advanced Program Planning and Evaluation in Educational Settings</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 8730</td>
<td>History of Education in the United States</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 8870</td>
<td>Curriculum Leadership</td>
<td>3</td>
</tr>
<tr>
<td>EDPL 8965</td>
<td>Advanced Practicum in Educational Leadership</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours 24

Elective Course (3 credits)

Students choose an elective in an area of interest and in consultation with their adviser.

Educational Policy and Leadership Courses

EDPL 6000. Introduction to Educational Inquiry. 3 cr. hrs.
Explores multiple approaches to educational research with emphasis on reading, critiquing and using research to develop and support strong oral and written theses in discussing educational issues.

EDPL 6100. Introduction to Student Affairs. 3 cr. hrs.
Historical, philosophical and theoretical foundations of the field of student affairs in higher education in the United States. Roles and functions of various student affairs divisions and how they contribute to purposes of post-secondary education. Current issues in the field.

EDPL 6130. Counseling Skills for Student Affairs Professionals. 3 cr. hrs.
An introduction to counseling theory and the role of counseling in student affairs emphasizing the development of basic counseling, helping and referral skills through readings, assignments and participation in role-plays. Students gain an appreciation for consultation between counselors and student affairs professionals and an understanding of the ethical and legal standards of the counseling profession.

EDPL 6140. Diversity, Identity and the Student Affairs Professional. 3 cr. hrs.
Research and theoretical perspectives on multiculturalism and diversity issues in higher education. Focuses on how race, ethnicity, gender, age, sexual orientation, disability, religion, socioeconomic status and national origin impact the college setting. Prereq: EDPL 6200.

EDPL 6200. Student Development in Higher Education. 3 cr. hrs.
Overview of major theories of college student development with emphasis on cognitive and psychosocial theories. Applications for work in student affairs and leadership in higher education.

EDPL 6210. Environmental Theory Assessment in Higher Education. 3 cr. hrs.

EDPL 6250. History of Higher Education in the United States. 3 cr. hrs.
Basic history of the American college and university. Colonial foundations, private and state-controlled institutions, professional, technical, and graduate studies. Recent trends and issues in higher education.

EDPL 6260. Organizational Theory and Administration in Higher Education. 3 cr. hrs.
Contemporary theories of organizational behavior and administration and their applications to institutions of higher education. Educational governance and leadership.

EDPL 6300. Classics in the Philosophy of Education. 3 cr. hrs.
Selected texts from a number of ancient and contemporary thinkers significant in the philosophical and educational tradition. Analysis of ramifications for current educational theory and practice.
EDPL 6310. Contemporary Philosophies of Education. 3 cr. hrs.
Contemporary philosophical approaches to educational problems and issues, including: pragmatist, analytic, existentialist, phenomenological, critical, hermeneutic, postmodern, and feminist.

EDPL 6330. Sociological Foundations of Education. 3 cr. hrs.
Examination of theories and research in sociology and social anthropology which focuses on the individual as a member of society and schools and education within broader social structures.

EDPL 6360. Lifespan Development. 3 cr. hrs.
A survey of major theories of human development that describes interaction among biological, psychological, sociocultural, cognitive, and moral factors from birth to death. Implications for educational institutions and teaching across the lifespan.

EDPL 6370. Catholic Theology and Education. 3 cr. hrs.
History of philosophical theology in the Catholic tradition and its bearing upon educational theory and practice. Investigation into theological methods and principles and their implications for education through an examination of the thought of selected individuals representative of the Catholic heritage. Attention to such theologians as St. Augustine, St. Thomas Aquinas, St. Bonaventure, Duns Scotus, Newman, Rahner, and Lonergan. Specific problems confronting Catholic education today.

EDPL 6380. Motivation and Learning. 3 cr. hrs.
Major theories of motivation (socialization of achievement motivation, expectancy-value, attributions, self-efficacy) and their relationship to learning and self-regulation in schools, institutions of higher education, and workplaces. Implications for teaching practice and research.

Designing and conducting research for the purpose of improving educational practice. Emphasis on action research, qualitative and quantitative methods, conducting literature reviews, and proposal writing. Prereq: At least 12 graduate credits including EDPL 6000; cons. of dept.

EDPL 6410. Research Practicum. 3 cr. hrs.
Students design, conduct, write and present results of a practice-based research project. Addresses implications of practitioner research for curriculum, pedagogy, leadership and educational reform. Prereq: Cons. of dept.

EDPL 6420. Teacher as Leader. 3 cr. hrs.
Survey of leadership theories and roles for teachers in schools. Skill development in group dynamics, motivation, communication and human relations. The teacher leader in relation to organizational change, decision-making, team-building and moral leadership.

EDPL 6445. Learning and Curriculum Theories. 3 cr. hrs.
Develops an understanding of the various social, political and theoretical frameworks that impact curriculum, instruction and learning, which includes understanding how students differ in their approaches to learning and how curriculum and instruction can be adapted to be responsive to these differences. Students develop skills to design, research, analyze and revise curriculum in order to provide equitable learning opportunities and improve student learning.

EDPL 6450. Theories of Learning Applied to Instruction. 3 cr. hrs.
Survey of major theories of learning. Use of learning theory to analyze and critique curriculum and design learner-centered instruction and assessments.

EDPL 6455. Sociocultural Perspectives on Learning. 3 cr. hrs.
Examination of Vygotsky and other sociocultural theorists who have studied learning and development in cultural, historical and institutional contexts. Use of sociocultural theory in research and practice.

EDPL 6460. Literacy and Children’s Literature for the Primary Grades. 3 cr. hrs.
Theory and practice in teaching reading, language arts, and children's literature from a developmental perspective to diverse lower elementary learners.

EDPL 6470. Literacy and Children’s Literature for the Intermediate Grades. 3 cr. hrs.
Theory and practice in teaching reading, language arts, and children's literature from a developmental perspective to diverse upper elementary learners.

EDPL 6480. Literature for Children and Adolescents. 3 cr. hrs.
History and survey of literature for children and adolescents. Theoretical study and practical application of reader response, literary analysis, and current topics in the field of literature for children and adolescents.

EDPL 6490. Writing for Children and Adolescents. 3 cr. hrs.
Theories and research on the writing process and current methods of teaching writing to elementary and secondary students.

EDPL 6500. Advanced Language Arts for Teachers. 3 cr. hrs.
Current research-based methods, materials, and assessment designed for practicing K-8 reading and language arts teachers in the primary and intermediate grades.

EDPL 6560. Literacy Assessment and Instruction. 3 cr. hrs.
Developmental theory of assessment and instruction with experience conducting assessment and planning of instruction and interventions to meet individual literacy needs of children and adolescents. Prereq: EDUC 6020 and EDPL 6470.

EDPL 6570. Literacy Leadership of Reading Programs. 3 cr. hrs.
Analysis and evaluation of instructional programs in reading. Emphasis on aiding teachers and administrators in planning, organizing and implementing effective reading programs. Methods for involving parents and the community in developing and implementing the reading program. Prereq: EDPL 6970.
EDPL 6580. Psychology of Reading. 3 cr. hrs.
Current theory and research on the psychological, neurophysiological, sociocultural, and educational factors that influence reading development and variation in reading development. Prereq: EDPL 6460 and EDPL 6470 or equiv.

EDPL 6670. Faculty Roles in Higher Education. 3 cr. hrs.
Seminar aimed at students planning academic careers in higher education. Focus on changes in traditional dimensions of teaching, research, and service in light of current research on teaching and learning; corporate influences on higher education; and current critiques of higher education.

EDPL 6680. Designing and Teaching Effective Courses in Higher Education. 3 cr. hrs.
Seminar aimed at students planning academic careers in higher education. Focus on planning, delivering, and evaluating courses in higher education that produce significant student learning in light of current advances in cognitive science relevant to teaching and learning.

EDPL 6700. Organizational Theory and Administration in K-12 Schools. 3 cr. hrs.
Develops a deeper understanding of various theories, models and current practices that impact the effectiveness of organizations with an emphasis on how these can be applied in the K-12 school environment. Explores the role leadership plays in holding crucial conversations to work through conflict and help organizations achieve common goals for the common good.

EDPL 6707. Leadership Foundations of Private Education. 3 cr. hrs.
Historical, philosophical, sociological, political and theological foundations of education for both sectarian and non-sectarian schools. Implications for a variety of leadership models.

EDPL 6712. Politics and Community Relations in Educational Organizations. 3 cr. hrs.
Explores the critical perspectives, expansive understandings, socio-emotional capacities and ethical commitment necessary to serve diverse communities. Students examine how race and class shape the historical and current experience of different groups that make up the school community; work to develop their own capacity to see, hear, and fully serve traditionally marginalized students and their families; and examine the demands of and possibilities for creating schools that challenge and support all young people.

EDPL 6720. Business Administration of the Educational Organization. 3 cr. hrs.
Provides a theoretical and practical background in school business administration for school administrators and teacher leaders. The content and activities teach the abilities necessary to be a successful K-12 building level administrator of the school business functions. Emphasizes the abilities needed in the areas of school finance (public and nonpublic), budget planning and management, facilities management, human resources management and other business aspects of the school community.

EDPL 6730. History of Education in the United States. 3 cr. hrs.
Examines the development of public education. Emphasizes contests over the proper role of schools in promoting equity, diversity, and democracy. Pays particular attention to how different groups experienced and shaped schools over time. Considers the relationship between the expansion of schooling and equal educational opportunity.

EDPL 6750. The Principalship. 3 cr. hrs.
Guides aspiring school leaders to sharpen and communicate their vision and develop the skills to inspire and mobilize others around a common agenda for change. Students are challenged to examine their core principles and practice applying them to situations marked by contending interests and ethical complexity. Each student conducts an in-depth critical case analysis of a school’s outcomes and practices in the areas of instruction, climate and culture, professional capacity, leadership, and parent and community relations.

EDPL 6800. American Law and the Educational Organization. 3 cr. hrs.
Explores legal issues that impact schools, students, employees and others while developing an understanding of how school administrators implement rules, procedures and policies to ensure the protection of rights and fulfillment of legal responsibilities.

EDPL 6860. Instructional Leadership. 3 cr. hrs.
Focuses on the supervision and evaluation of teachers, including their professional development and growth, in order to increase and enhance effective teaching and student learning. Through role-playing and field experiences, students hone the technical, social and interpersonal skills important for coaching and providing feedback focused on improved teaching and learning.

EDPL 6870. Curriculum Leadership. 3 cr. hrs.
Examines the structure and organization of curriculum and its integration with instruction and assessment. Designed to help educational leaders work within their school or district in addressing these key questions: What do students need to learn? How do we know they are learning it? What do we do when students struggle to learn? How do we implement systemic changes to ensure students are growing significantly and appropriately in their learning? Prereq: EDPL 6445 or EDPL 8445.

EDPL 6931. Topics in Educational Policy and Leadership. 1-3 cr. hrs.
In-depth study of educational concepts and theories in a broad area which, because of their topicality, are not the subject of a regular course. Specific topics will be designated in the Schedule of Classes.

EDPL 6953. Seminar in Analysis of Teaching. 3 cr. hrs.
Use of current theories and research on teaching to examine and assess teaching practice.

EDPL 6955. Seminar in Educational Policy and Leadership. 1-6 cr. hrs.
Graduate seminars on current topics in leadership and supervision of interest to the professional educator. S/U grade assessment.
EDPL 6965. Practicum in Student Affairs Leadership. 1. 3 cr. hrs.
Field application relating to educational leadership theory to applied practice of higher education leadership in a university-approved setting. Requires participation in an on-campus seminar. S/U grade assessment. Prereq: Cons. of dept.

EDPL 6966. Practicum in Student Affairs Leadership. 2. 3 cr. hrs.
Field application relating to educational leadership theory to applied practice of higher education leadership in a university-approved setting. Requires participation in an on-campus seminar. S/U grade assessment. Prereq: EDPL 6965 and cons. of dept.

EDPL 6970. Practicum: Literacy Assessment and Instruction. 3 cr. hrs.
A practicum involving assessment and instruction of K-12 students at varying stages of reading development. Prereq: EDPL 6560 and cons. of dept.

EDPL 6975. Practicum in K-12 Literacy Leadership. 1-3 cr. hrs.
A variety of school-based experiences in literacy leadership that can include the coaching of reading teachers, selection of curriculum and assessment materials, and development and delivery of in-service programs. S/U grade assessment. Prereq: EDPL 6570.

EDPL 6980. Principalship Practicum. 3 cr. hrs.
Participation in an extended on-site field experience with an experienced mentor school leader, as well as a seminar focusing on application of the eleven administrative standards. Students demonstrate their competency in each standard through the field experience and other course work, and they assemble resources for school leadership. Prereq: Cons. of dept.; 18 credit hours of educational leadership courses.

EDPL 6985. Director of Instruction Practicum. 3 cr. hrs.
Participation in an extended on-site field experience with an experienced current leader in curriculum and instruction, as well as a seminar focusing on application of the eleven administrative standards within a district or system. Through the field study experience, readings, class discussions and reflections, students demonstrate their competency in each standard. Prereq: Cons. of dept.

EDPL 6995. Independent Study in Education Policy and Leadership. 1-3 cr. hrs.
Provides opportunities to investigate and study areas of interest through readings, research, field experience, projects, and/or other educational activities under the direction of a faculty adviser. Prereq: Cons. of instr. and cons. of dept. ch. Graduate students must complete an approval form signed by the dept. ch. or designated representative.

EDPL 6997. Capstone in Educational Policy and Leadership. 3 cr. hrs.
Critical analysis and discussion of significant issues confronting the contemporary educational leader. Prereq: Cons. of dept.; at least 24 credits in educational leadership.

EDPL 6999. Master’s Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. and cons. of instr.

EDPL 8000. The Superintendency. 3 cr. hrs.
Leadership of the school district system. The roles played by the superintendent: board chief operating officer, visionary, motivator, risk-taker, communicator, lobbyist, etc. Prereq: Master's degree and principal's certification.

EDPL 8010. Advanced Personnel Leadership. 3 cr. hrs.
Comprehensive study of personnel services in the educational setting, including: recruitment, selection, compensation, staff development, collective bargaining, and employee contract administration. Prereq: Cons. of dept.

EDPL 8020. Advanced Politics and Community Relations in Educational Organizations. 3 cr. hrs.
Advanced study of theoretical and practical dimensions of the sociocultural, economic and political forces affecting educational organizations and how educational leaders can respond and interact with them.

EDPL 8030. Advanced Theory and Practice in Educational Finance. 3 cr. hrs.
Advanced study of school and school district finance from theoretical, research, legal, and political perspectives with emphasis on implications for school district leadership.

EDPL 8040. Advanced Program Planning and Evaluation in Educational Settings. 3 cr. hrs.
Exploration of theories, models, and current practices in leadership, planning, and assessment within educational organizations.

EDPL 8250. History of Higher Education in the United States. 3 cr. hrs.
Basic history of the American college and university. Colonial foundations, private and state-controlled institutions, professional, technical, and graduate studies. Recent trends and issues in higher education.

EDPL 8260. Organizational Theory and Administration in Higher Education. 3 cr. hrs.
Contemporary theories of organizational behavior and administration and their applications to institutions of higher education. Educational governance and leadership.

EDPL 8300. Classics in the Philosophy of Education. 3 cr. hrs.
Selected texts from a number of ancient and contemporary thinkers significant in the philosophical and educational tradition. Analysis of ramifications for current educational theory and practice.

EDPL 8310. Contemporary Philosophies of Education. 3 cr. hrs.
Contemporary philosophical approaches to educational problems and issues, including: pragmatist, analytic, existentialist, phenomenological, critical, hermeneutic, postmodern, and feminist.
EDPL 8330. Sociological Foundations of Education. 3 cr. hrs.
Examination of theories and research in sociology and social anthropology which focuses on the individual as a member of society and schools and education within broader social structures.

EDPL 8360. Lifespan Development. 3 cr. hrs.
A survey of major theories of human development that describes interaction among biological, psychological, sociocultural, cognitive, and moral factors from birth to death. Implications for educational institutions and teaching across the lifespan.

EDPL 8370. Catholic Theology and Education. 3 cr. hrs.
History of philosophical theology in the Catholic tradition and its bearing upon educational theory and practice. Investigation into theological methods and principles and their implications for education through an examination of the thought of selected individuals representative of the Catholic heritage. Attention to such theologians as St. Augustine, St. Thomas Aquinas, St. Bonaventure, Duns Scotus, Newman, Rahner, and Lonergan. Specific problems confronting Catholic education today.

EDPL 8445. Learning and Curriculum Theories. 3 cr. hrs.
Develops an understanding of the various social, political and theoretical frameworks that impact curriculum, instruction and learning, which includes understanding how students differ in their approaches to learning and how curriculum and instruction can be adapted to be responsive to these differences. Students develop skills to design, research, analyze and revise curriculum in order to provide equitable learning opportunities and improve student learning.

EDPL 8450. Theories of Learning Applied to Instruction. 3 cr. hrs.
Survey of major theories of learning. Use of learning theory to analyze and critique curriculum and design learner-centered instruction and assessments.

EDPL 8455. Sociocultural Perspectives on Learning. 3 cr. hrs.
Examination of Vygotsky and other sociocultural theorists who have studied learning and development in cultural, historical and institutional contexts. Use of sociocultural theory in research and practice. Prereq: EDPL 8450.

EDPL 8700. Organizational Theory and Administration in K-12 Schools. 3 cr. hrs.
Develops a deeper understanding of various theories, models and current practices that impact the effectiveness of organizations with an emphasis on how these can be applied in the K-12 school environment. Explores the role leadership plays in holding crucial conversations to work through conflict and help organizations achieve common goals for the common good.

EDPL 8707. Leadership Foundations of Private Education. 3 cr. hrs.
Historical, philosophical, sociological, political and theological foundations of education for both sectarian and non-sectarian schools. Implications for a variety of leadership models.

EDPL 8710. Multiple Paradigms in Educational Research. 3 cr. hrs.
Examination of educational research and knowledge within a philosophy of science framework. Study of competing epistemologies and how they shape and are shaped by the practice of education. Focus on use of empirical-analytic, interpretive and critical paradigms for critiquing, conceptualizing and conducting educational research.

EDPL 8712. Politics and Community Relations in Educational Organizations. 3 cr. hrs.
Explores the critical perspectives, expansive understandings, socio-emotional capacities and ethical commitment necessary to serve diverse communities. Students examine how race and class shape the historical and current experience of different groups that make up the school community; work to develop their own capacity to see, hear, and fully serve traditionally marginalized students and their families; and examine the demands of and possibilities for creating schools that challenge and support all young people.

EDPL 8715. Interpretive and Critical Research in Education 1. 3 cr. hrs.
Theory and rationale of qualitative research methods in the social sciences. Historical research, case studies, field studies, non-invasive approaches. Data gathering and analysis procedures. Prereq: EDPL 8710 or equiv.

EDPL 8720. Interpretive and Critical Research in Education 2. 3 cr. hrs.
Building on the understanding and skills developed in EDPL 8715, students conduct, interpret and present in written and oral form a course-long research project. Addresses a range of research issues and problems as they emerge in students' works-in-progress. Prereq: EDPL 8710 and EDPL 8715 or equiv.

EDPL 8730. History of Education in the United States. 3 cr. hrs.
Examines the development of public education. Emphasizes contests over the proper role of schools in promoting equity, diversity, and democracy. Pays particular attention to how different groups experienced and shaped schools over time. Considers the relationship between the expansion of schooling and equal educational opportunity.

EDPL 8800. American Law and the Educational Organization. 3 cr. hrs.
Explores legal issues that impact schools, students, employees and others while developing an understanding of how school administrators implement rules, procedures and policies to ensure the protection of rights and fulfillment of legal responsibilities.

EDPL 8860. Instructional Leadership. 3 cr. hrs.
Focuses on the supervision and evaluation of teachers, including their professional development and growth, in order to increase and enhance effective teaching and student learning. Through role-playing and field experiences, students hone the technical, social, and interpersonal skills important for coaching and providing feedback focused on improved teaching and learning.
EDPL 8870. Curriculum Leadership. 3 cr. hrs.
Examines the structure and organization of curriculum and its integration with instruction and assessment. Designed to help educational leaders work within their school or district in addressing these key questions: What do students need to learn? How do we know they are learning it? What do we do when students struggle to learn? How do we implement systemic changes to ensure students are growing significantly and appropriately in their learning? Prereq: EDPL 6445 or EDPL 8445.

EDPL 8880. Current Issues in Educational Policy and Leadership for the District Administrator. 3 cr. hrs.
Guided research and discussion of significant issues confronting educational leaders.

EDPL 8953. Seminar in Analysis of Teaching. 3 cr. hrs.
Use of current theories and research on teaching to examine and assess teaching practice.

EDPL 8955. Seminar Social Contexts and Educational Policy 1. 3 cr. hrs.
Examines significant historical and sociological texts pertinent to understanding matters of race and education.

EDPL 8956. Seminar Social Contexts and Educational Policy 2. 3 cr. hrs.
Examines the claims of influential texts that promote various policies meant to expand equality of educational opportunity.

EDPL 8959. Seminar Research on Teacher Education. 3 cr. hrs.
Study and analysis of current research on preparation and professional development of teachers. Prereq: EDPL 6450 or EDPL 8450.

EDPL 8960. Dissertation Proposal Seminar. 3 cr. hrs.
Systematic exploration of the process and production of the dissertation proposal, including refinement of dissertation question(s), a focused literature review, and draft of a proposal text. S/U grade assessment. Prereq: Cons. of dept.; 33 credits in the doctoral program.

EDPL 8965. Advanced Practicum in Educational Leadership. 3 cr. hrs.
Field application relating educational administrative theory to the applied practice of educational administration at the system or college level. Participants must be in a university-approved setting and must participate in an on-campus seminar. S/U grade assessment. Prereq: Cons. of dept.

EDPL 8995. Independent Study in Education Policy and Leadership. 1-3 cr. hrs.
Provides opportunities to investigate and study areas of interest through readings, research, field experience, projects, and/or other educational activities under the direction of a faculty adviser. Offered every term. Prereq: Cons. of instr. and cons. of dept. ch. Graduate students must complete an approval form signed by the dept. ch. or designated representative.

EDPL 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept.; cons. of instr.

EDPL 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9977. Field Placement Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9978. Field Placement Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9979. Field Placement Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.
EDPL 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs. 
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9992. Professional Project Continuation: Half-Time. 0 cr. hrs. 
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9993. Professional Project Continuation: Full-Time. 0 cr. hrs. 
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9994. Master’s Thesis Continuation: Less than Half-Time. 0 cr. hrs. 
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9995. Master’s Thesis Continuation: Half-Time. 0 cr. hrs. 
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9996. Master’s Thesis Continuation: Full-Time. 0 cr. hrs. 
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs. 
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs. 
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

EDPL 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs. 
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept.

Education Courses

EDUC 5000. Educational Inquiry 2: Advanced Topics. 3 cr. hrs. 
Examines, via inquiry, how structural inequities in society are connected to educational inequities and analyzes how varying degrees of power, privilege and access shape what is and what is possible in education. Each term, the main lens for examination changes; however, the main concepts remain the same.

EDUC 5007. Teaching Middle/Secondary Social Science. 3 cr. hrs. 
Application of teaching methods to social studies in middle and high schools. Field experience required. Prereq: Admission to post-baccalaureate teaching licensure program.

EDUC 5017. Teaching Middle/Secondary Science. 3 cr. hrs. 
Application of methods to teach inquiry-based science in the physical sciences, physics, biology, chemistry and environmental sciences at the middle/secondary level. Includes planning, preparation of materials, assessment, and use of technology aligned with National Science Education Standards and OSHA safety requirements. Field experience required. Prereq: Admission to post-baccalaureate teaching licensure program.

EDUC 5027. Teaching English in the Secondary School. 3 cr. hrs. 
An investigation of the role of the teacher, the student, and the curricular methods, procedures, and materials used in the teaching of language, literature, and composition in the secondary school. A 40-hour field experience in selected area schools is required.

EDUC 5037. Literacy in the Content Areas. 3 cr. hrs. 
Interrelationships of reading, writing, speaking, and listening as learning skills in the content areas. Included are methods and materials the teacher can use in the classroom setting to improve literacy skills in all content areas and integrate literature across the curriculum.

EDUC 5067. Strategies in Religious Education. 3 cr. hrs. 
Application of current catechetical theory and educational strategies to the teaching of religion. Development of curriculum objectives and assessments. Analysis of instructional materials and other resources for teaching religion. Open to all upper division students in the university. Prereq: Admission to post-baccalaureate teaching licensure program.

EDUC 5217. Methods of Teaching Children/Youth with Exceptional Needs. 3 cr. hrs. 
Designed to provide teacher candidates with knowledge of and opportunities to apply research-based differentiated instructional and behavioral management methods and adaptations for students with a variety of special needs. In addition to course work, 20 hours of field experience is required. Focuses on how to implement universal design strategies, RTI and PBIS in the regular classroom setting.

EDUC 5230. Learning and Linguistic Diversity. 3 cr. hrs. 
Covers three bodies of knowledge regarding language: basic principles of sociolinguistics, the nature of learning a second language or a second dialect, and theories of effective methods for teaching speakers of languages and dialects other than Standard English (e.g., bilingual education and/or English as a second language instruction). Each of these bodies of knowledge will be contextualized in students’ learning experiences and in teachers’ classroom practices.

EDUC 5277. Theory and Methods of Teaching Bilingual-Bicultural Learners. 3 cr. hrs. 
Study, application, and practice of theories and methods of delivering bilingual/bicultural instruction. Focus on first and second language learning strategies and culturally responsive teaching methods that reflect the language and culture of students living in bilingual/bicultural contexts.

EDUC 5297. Teaching in the Middle School. 4 cr. hrs. 
Foundations, methods, and strategies for teaching at the middle school level. Lab required. Field experience required.
EDUC 5317. Teaching Elementary Level Science. 3 cr. hrs.
Curriculum development and instructional methods for teaching inquiry-based science at the primary and upper elementary level. Includes preparation of materials, assessment, use of technology and field experiences. Field experience required. Prereq: Admission to post-baccalaureate teaching licensure program.

EDUC 5337. Teaching Elementary Social Studies. 3 cr. hrs.
Curriculum development, instructional strategies and techniques for teaching elementary social studies with emphasis on primary research skills. Includes preparation of materials, assessment and micro-teaching. Prereq: Admission to post-baccalaureate teaching licensure program.

EDUC 5357. Teaching Elementary Reading, Language Arts, and Children's Literature. 4 cr. hrs.
Teaching reading, language arts, and children's literature from a developmental perspective to diverse upper elementary learners. Emphasis on developing the relationship between the three literacy areas and how social factors influence students' literacy learning. Field experience required.

EDUC 5540. Philosophy of Education. 3 cr. hrs.
Principles and methods of various classical and contemporary philosophies and their implications and applications in education. Attention to professional ethics and students' development of their own philosophies of education.

EDUC 5931. Topics in Education. 1-4 cr. hrs.
Various topics in education as identified in the Schedule of Classes.

EDUC 5964. Teaching Elementary Level Reading Practicum. 4 cr. hrs.
Supervised experience in the teaching of reading to struggling readers. Emphasis on linking literacy assessment and instruction. Seminars and small group tutoring sessions are included.

EDUC 6000. Urban Teaching Seminar. 3 cr. hrs.
First semester seminar designed to challenge and support new teachers as they select, implement and critically evaluate teaching methods and instructional materials within the context of the teaching assignments. Prereq: Admission to the Teach For America program.

EDUC 6030. Methods of Teaching Adolescents. 3 cr. hrs.
General middle school methods in the areas of learner-centered teaching, pedagogical strategies, supportive learning environment, lesson planning and assessment practices. Students investigate and study diverse learners, communication skills, critical reflection and social justice through the perspective of the middle school philosophy. Prereq: Admission to the Teach For America program.

EDUC 6040. Introduction to Learning and Assessment. 3 cr. hrs.
Application of major theories of learning to instructional planning and assessment. Use of technologies to enhance learning and assessment.

EDUC 6060. Design Issues in Technology and Instructional Systems. 3 cr. hrs.
Explores application of concepts, issues, processes, theories, and techniques of instructional design in a variety of electronic learning contexts including instructional modules, Web-based courses, computer graphics, and educational software.

EDUC 6070. Facilitating a Web-Based Course. 3 cr. hrs.
Research-based methods and techniques for building effective online learning communities, including facilitation of structured dialogue and interaction, reflection, critical thinking, collaboration, and active engagement in the learning process.

EDUC 6080. Theories and Research in Instructional Technology. 3 cr. hrs.
Survey of recent research developments and theoretical frameworks in the field, focusing on current cognitive and social constructivist theories. Students design individual research projects in areas of interest.

EDUC 6090. Emerging Instructional Technologies in Education. 3 cr. hrs.
Critical study of research and instructional use of emerging Web technologies in K-12 schools, higher education, and other learning environments.

EDUC 6340. Child and Adolescent Development. 3 cr. hrs.
An examination of the interaction among biological, psychological, social, and cultural factors that influence human development. Educational implications of these issues.

EDUC 6350. Teach for America Reading Methods. 3 cr. hrs.
Teaching reading, language arts, and literature from a developmental perspective for the lower elementary levels. Emphasis on developing the relationship among the three areas as well as developing experience in administering reading tests, diagnosing, and remediating reading problems. Prereq: Only open to Teach for America corps members.

EDUC 6360. Teach for America Math Methods 1. 3 cr. hrs.
Mathematical content and processes for elementary teachers using a problem-solving approach. Integrates mathematics content with teaching methods and learning theory for the lower elementary/middle school levels. Prereq: Only open to Teach for America corps members.

EDUC 6365. Teach for America Math Methods 2. 3 cr. hrs.
Mathematical content and processes for elementary teachers using a problem-solving approach. Integrates mathematics content with teaching methods and learning theory for the upper elementary/middle school levels. Prereq: Only open to Teach for America corps members.

EDUC 6370. Teach for America Integrated Methods: Science, Social Studies, and Fine Arts. 3 cr. hrs.
Curriculum development, instructional strategies and the application of teaching methods in elementary science, social studies and fine arts. Prereq: Only open to Teach for America corps members.
EDUC 6930. Special Topics in Education. 1-5 cr. hrs.
Offered as an experimental course to evaluate and determine if a course should be incorporated into the regular curriculum of a program, or courses in the approval process pipeline, but not yet officially approved. Once the same course has been offered twice as a Special Topic, it cannot be offered again until it moves through the curriculum approval process and is approved with a regular curriculum course number. Prereq: Admitted to the graduate EDUC program; or cons. of dept.

EDUC 6965. Middle/Secondary Education Practicum. 1-3 cr. hrs.
Full day, full term of public or private school teaching, Monday through Friday. Regular on-site visitation by university faculty. Weekly seminar required. S/U grade basis. Prereq: EDUC 5297 and cons. of dept.; admission to the College of Education.

EDUC 6966. Elementary/Middle Education Practicum. 1-3 cr. hrs.
Full day, full term of public or private school teaching, Monday through Friday. Regular on-site visitation by university faculty. Weekly seminar required. S/U grade assessment. Prereq: EDUC 5297 and cons. of dept.; admission to the College of Education.

EDUC 6971. Introduction to Teaching and Learning. 6 cr. hrs.
Addresses topics of child and adolescent development, exceptional needs and diversity. While participating in projects at informal science institutions (ISIs), scholars observe adolescents interacting with STEM activities. Provides a foundation to understand adolescent development, and to recognize and support students with exceptional needs and from diverse backgrounds. The scholars reflect on observations of inquiry instructional approaches that are often difficult to find in many school settings. Opportunities to observe students from diverse backgrounds and with exceptional needs in these settings allow scholars to consider theory in context. Includes required field experience. Prereq: Admission to Noyce Scholar Graduate STEM Teacher Preparation Program.

EDUC 6972. Integrated STEM Methods. 6-9 cr. hrs.
Integrated teaching that includes general teaching methods, STEM teaching methods and literacy in the content areas of math and science for students in grades 6-12. Topics include: lesson and unit planning, instructional strategies, differentiation, classroom management, learning theory, pedagogical content knowledge and strategies for incorporating literacy skills in STEM content instruction. Scholars are provided multiple opportunities to merge theory with practice through analysis and reflection on their own teaching, as well as that in their site classrooms. Requires field experience. Prereq: EDUC 6971.

EDUC 6973. Teacher Practice. 9 cr. hrs.
In compliance with Wisconsin State Licensure requirements, scholars serve as student teachers under the direction of an assigned STEM classroom cooperating teacher and a university supervisor at a high-needs school for the entire secondary school semester. Scholars serve alongside their cooperating teacher, initially shadowing them and gradually assuming full responsibility for the teaching day. Topics include: theories of learning, analyzing assessment data and pedagogical practices. Requires field experience (student teaching). Prereq: EDUC 6972.

EDUC 6974. Professional Practice. 6 cr. hrs.
Scholars are prepared for professional practice in education; they work closely with school personnel to resolve a current educational challenge and conduct collaborative research toward generating solutions to a challenge in their partner institution. This research applies STEM educational theory to a real-world challenge, helping to synthesize learning while assisting the institution in applying current educational theory to resolving existing problems. Instruction also includes current issues in educational policy pertaining to STEM education, legal issues facing teachers, and the rights of students and families as they pertain to education. Requires field experience (research partnerships). Prereq: EDUC 6973.
Engineering

*Opus Dean: Kristina M. Ropella, Ph.D.*

Opus College of Engineering Graduate Programs website (https://www.marquette.edu/grad/grad-engineering.php)

**Degrees Offered**

Master of Science, Master of Engineering; Doctor of Philosophy; Graduate Certificate

**Programs Overview**

The Opus College of Engineering offers four graduate engineering programs through which to pursue either a master of science (M.S.) or doctor of philosophy (Ph.D.) degree: biomedical engineering (p. 178), civil engineering (p. 187), electrical and computer engineering (p. 211), and mechanical engineering (p. 225).

The Departments of Biomedical Engineering (p. 179) and Mechanical Engineering (p. 228) also offer a master of engineering (M.E.) degree in addition to the master of science and the doctor of philosophy degrees.

An interdisciplinary program is offered, leading to the master of science degree. Healthcare Technologies Management is jointly offered and administered by the Opus College of Engineering and the Medical College of Wisconsin. Details on this program can be found in the Healthcare Technologies Management (p. 223) section.

The doctoral program in biomedical engineering is an interdisciplinary program is offered by the joint Department of Biomedical Engineering in the Opus College of Engineering and the Medical College of Wisconsin. Details on this program can be found in the Biomedical Engineering (p. 178) section.

The Master’s Across Boundaries program offers five graduate certificates (https://www.marquette.edu/grad/grad-engineering.php) that are designed to increase the breadth and depth of knowledge relevant to practicing engineers. The certificates are offered in environmental engineering, essential skills for practicing engineers, machine learning for engineering applications, and renewable energy technology and integration. Details on these certificates can be found in the Graduate Certificates (p. 239) section.
Biomedical Engineering (BIEN)

Chairperson: Frank A. Pintar, Ph.D.

Biomedical Engineering Graduate Programs website (https://www.marquette.edu/grad/programs-biomedical-engineering.php)

Degrees Offered

Master of Science, Master of Engineering; Doctor of Philosophy
Medical Scientist Training Program (M.D./Ph.D.) - MCW only

Mission Statement

The Marquette University (MU) and Medical College of Wisconsin (MCW) Department of Biomedical Engineering is dedicated to delivering an extraordinary educational experience designed to empower the next generation of biomedical engineers, scientists and physicians. If you have a passion for learning and a desire to translate ideas into action — particularly those involving medical devices and health care technologies — let our faculty (http://bulletin.marquette.eduabout:blank), staff (http://bulletin.marquette.eduabout:blank) and industry partners (http://bulletin.marquette.eduabout:blank) guide you on your journey. We develop leaders and problem solvers skilled at applying engineering, science and design principles to improve health in the service of humanity by:

- Discovering and disseminating new knowledge;
- Promoting critical thinking and lifelong learning;
- Guiding students to meaningful and ethical professional and personal lives;
- Fostering interdisciplinary and collaborative research and education through academic and industrial alliances;
- Continuing innovative leadership in education, research and industrial relationships; and
- Inspiring faculty and students to serve others.

Program Descriptions

The MU-MCW biomedical engineering program (https://mcw.marquette.edu/biomedical-engineering/) is interdisciplinary in nature, involving the application of engineering and mathematics to the solution of problems related to medicine and biology. The faculty reflect this interdisciplinary nature in their courses and research. MU faculty are synergistically complemented by faculty from the MCW. The Department of Biomedical Engineering fosters collaborative interactions between the two institutions. Research can be characterized by the general areas of bioinstrumentation, biomechanics, biomedical imaging, cellular and molecular engineering, computational biology and bioinformatics, and rehabilitation bioengineering.

Prerequisites for Admission

Students with backgrounds in engineering, physical science and life science disciplines are eligible for admission to the master of science, master of engineering, doctoral, and M.D./Ph.D. programs in biomedical engineering. A baccalaureate degree in an appropriate area with a minimum grade point average of 3.000 is required. Applicants who do not have an engineering degree must complete prerequisite engineering requirements. For each degree, the list of prerequisites can be found in the degree’s handbook. See the department webpage for links to the handbooks.

Application Requirements

Applicants must submit, directly to the Marquette University (MU) Graduate School (http://marquette.edu/grad/future_apply.shtml/) for M.S. and M.E. degree programs or to Medical College of Wisconsin (MCW) Graduate School (https://admissions.mcw.edu/manage/) for the Ph.D. and M.D./Ph.D. degree programs:

1. A completed application form and fee online.
2. Copies of all college/university transcripts.¹
3. Three letters of recommendation.
4. GRE scores (General Test only).
5. A brief statement of purpose that includes the proposed area of research specialization.
6. (For M.E. applicants only) an interview with the M.E. program director.
7. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the MU or MCW Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.
General Information

All admitted students are required to obtain and read the department’s Graduate Student Handbooks for each of the degree programs, which contains complete details about the biomedical engineering programs. The handbook for each degree is available through the Department of Biomedical Engineering website.

Biomedical Engineering Master of Science (M.S.) Requirements

**Specializations:** Bioinstrumentation/Computers, Biomechanics/Biomaterials, Rehabilitation Bioengineering, Systems Physiology

Upon enrolling in the master of science program in biomedical engineering, a student selects one of four specializations. Faculty will design a curriculum and research program to address the specific goals of each student. Programs will include course work in engineering, biology, mathematics and medicine, all of which will be integrated with research laboratory experience.

A master of science student must complete 24 credit hours of course work (including three credit hours of physiology) and six credit hours of thesis work. The student also must pass a comprehensive examination and submit an approved thesis.

Accelerated Bachelor’s-Master’s Degree Program

This program allows Marquette University students to earn both their master of science degree in biomedical engineering and a bachelor of science degree in five years. Students currently enrolled in the undergraduate biomedical engineering program at Marquette University (with a GPA of 3.500 or above) may apply for admission to the five-year program during their junior year. Students must submit an application to the Graduate School, indicate their interest in the five-year program and meet all other admission criteria as stated in the Application Requirements section. (GRE test scores must be submitted before the start of the fifth year.)

Students may take master’s level courses in their senior undergraduate year. These graduate courses count toward both the undergraduate and graduate degrees. The remaining courses are taken during the students’ fifth year. Work on the students’ theses research begins the summer between the junior and senior years. Students will continue to gain research laboratory experience the summer between the senior and fifth year, continuing through the final year, culminating in preparation of a written thesis and defense. Upon completion of the first term as master’s candidates, students must petition the Graduate School to transfer courses taken as undergraduates to the master’s degree.

Biomedical Engineering Master of Engineering (M.E.) Requirements

**Specializations:** Biocomputing, Bioimaging, Bioinstrumentation, Biomechanics, Biorehabilitation

Upon enrolling in the master of engineering program in biomedical engineering, a student selects one of five specializations and follows the curriculum designed for that specialization. The program includes course work in engineering, life sciences, mathematics, medicine and healthcare technologies management, all of which will be integrated in a capstone comprehensive written exam.

A master of engineering student must complete a total of 30 credit hours of course work, which includes three credits of independent readings and research. The student also must pass the capstone comprehensive examination.

Biomedical Engineering Doctoral Requirements

**Specializations:** Bioinstrumentation, Biomechanics, Biomedical Imaging, Cellular and Molecular Engineering, Computational Biology and Bioinformatics, Rehabilitation Bioengineering

Upon enrolling in the doctoral (Ph.D.) program in biomedical engineering, a student selects their area of specialization. Faculty design a curriculum and research program to address the specific goals of each student. Programs include course work in engineering, biology, mathematics and medicine, all of which are integrated with research laboratory experience.

The Ph.D. degree is conferred in recognition of marked ability and high attainment in the advancement of knowledge and pursuit of truth. The comprehensive knowledge expected of the student in their major field is such that the requirements for the degree usually take no less than four years of full-time work, or the equivalent, beyond the baccalaureate degree.

A doctoral student must complete a program of study prepared in consultation with their dissertation adviser and outlined on an approved Doctoral Program Planning Form. The student also must pass a doctoral qualifying examination (DQE) and submit and successfully defend a dissertation.

Students in the Medical Scientist Training Program (MSTP; a combined M.D./Ph.D. degree program) at MCW are eligible to choose the Ph.D. program of the joint MU-MCW Department of Biomedical Engineering for the Ph.D. requirements of the M.D./Ph.D. degree program.

MSTP students begin their curriculum at MCW with two full years of medical school (M1 and M2 years), during which they complete a large array of clinical, translational and basic science course work, equivalent to a master of science degree. During their M1 and M2 years, they also complete four one-month long laboratory rotations during which they gain valuable research experience. These lab rotations are intended to help MSTP students to choose a lab and a research area (by the end of their M2 year) for conducting their Ph.D. dissertation research. Following their M1 and M2 years,
MSTP students typically spend three to four years in graduate school, working toward their doctoral dissertation before returning to the medical school to complete their medical training.

The Doctoral Candidacy Examination consists of two parts. The first part involves writing a dissertation proposal in the form of an NIH-style F30/F31 fellowship grant proposal and submitting it to the student's Dissertation Committee. The second part is an oral examination, involving the student's presentation and defense of the dissertation proposal, in which the Dissertation Committee members serve as examiners. The student must submit a dissertation proposal and pass the oral examination to advance to doctoral candidacy.

Students entering the Ph.D. program with a bachelor of science degree are encouraged to take the DOE at or before the completion of 30 graduate credits of didactic course work. MSTP students and students entering the Ph.D. program with a master of science degree are encouraged to take the DOE at or before the completion of 15 graduate credits of didactic course work. Given the time constraints to which MSTP students must adhere, they are strongly advised to take the DOE and advance to doctoral candidacy by the end of their first year in the biomedical engineering doctoral program.

The dissertation must represent an original research contribution showing high attainment and clear ability to do independent research. A public defense of the dissertation (the final oral examination) is conducted after the student has completed all other formal requirements for the doctoral degree and has submitted a completed doctoral dissertation to his or her doctoral committee. The dissertation defense is conducted in the form of a department seminar.

Program Requirements

A minimum of 60 graduate credits are required to complete the Ph.D. degree in biomedical engineering. Prerequisite courses for applicants who do not have a biomedical engineering degree are not counted as graduate credits.

Reading and research credits can be earned by registering and attending a seminar series, workshop, conference, journal club or simply carrying dissertation-related activities. A student can register for up to 9 credits of reading and research per term during fall and spring terms and up to 6 credits during the summer. Students should register for dissertation credits in the term they intend to defend their dissertation.

Didactic Course Work

Students may choose their didactic course work from the following options under each category and must work with their adviser to develop their tailored Doctoral Program Planning Form.

### Systems Physiology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BIOL 5703</td>
<td>Exercise Physiology</td>
</tr>
<tr>
<td>BIEN 5720</td>
<td>Cardiopulmonary Mechanics</td>
</tr>
<tr>
<td>BIEN 6931</td>
<td>Topics in Biomedical Engineering</td>
</tr>
<tr>
<td>Physiol 08204</td>
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### Biostatistical Methods

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<tbody>
<tr>
<td>MSSC 5720</td>
<td>Statistical Methods</td>
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<tr>
<td>MSSC 5740</td>
<td>Biostatistical Methods and Models</td>
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### Biomedical Signal Processing

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>BIEN 5510</td>
<td>Image Processing for the Biomedical Sciences</td>
</tr>
<tr>
<td>BIEN 6200</td>
<td>Biomedical Signal Processing</td>
</tr>
<tr>
<td>BIEN 6210</td>
<td>Advanced Biomedical Signal Processing</td>
</tr>
<tr>
<td>BIEN 6220</td>
<td>Multidimensional Biomedical Time Series Analysis</td>
</tr>
<tr>
<td>Biophys 03240</td>
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### Bioethics

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<tr>
<td>Bioethics 10444</td>
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### Advanced Engineering Mathematics

<table>
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<tbody>
<tr>
<td>BIEN 6500</td>
<td>Mathematics of Medical Imaging</td>
</tr>
<tr>
<td>EECE 6010</td>
<td>Advanced Engineering Mathematics</td>
</tr>
<tr>
<td>MEEN 6101</td>
<td>Advanced Engineering Analysis 1</td>
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</table>

### Computational and Simulation Methods

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BIEN 5710</td>
<td>Analysis of Physiological Models</td>
</tr>
<tr>
<td>BIEN 6620</td>
<td>Modeling Rehabilitative Biosystems</td>
</tr>
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</table>
**Post-Baccalaureate Program of Study**

Those entering with a bachelor of science degree, are required to complete 36 credits in didactic course work, 9 credits in dissertation, and a minimum of 15 credits in reading and research.

<table>
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<tr>
<td>Reading and Research Credits</td>
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<tr>
<td><strong>Total Credit Hours</strong></td>
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</table>

**Post-Master’s Program of Study**

Those entering with a master of science degree or with graduate credits (see Transfer of Credit policy (https://bulletin.marquette.edu/grad/policiesofthegraduateschool/#transferofcredit)), are required to complete a minimum of 18 credits in didactic course work, 9 credits in dissertation, and a minimum of 33 credits in reading and research.

<table>
<thead>
<tr>
<th>Didactic Course Work</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctoral Dissertation Credits</td>
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</tr>
<tr>
<td>Reading and Research Credits</td>
<td>33</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

Doctoral students in the Biomedical Engineering Department are also required to register for the Department seminar series each term for the duration of their study (BIEN 6953 Seminar in Biomedical Engineering). For a given term, students are expected to attend at least two-thirds of the seminars.

**Courses**

**BIEN 5220. Embedded Biomedical Instrumentation. 3 cr. hrs.**

Fundamentals of digital circuit design and analysis and the application to embedded biomedical instrumentation. Topics include microprocessor principles and programming and system design constraints for medical electronics. Laboratory provides applications of concepts introduced in class.

**BIEN 5230. Intelligent Biosystems. 3 cr. hrs.**

Use of emerging tools in systems biology and soft computing to explore how biosystems with highly distributed ‘intelligence’ are designed to adapt to self- and environmentally-induced perturbations. Students obtain a basic understanding of key soft computing tools and use fuzzy expert system models. Applications to smart healthcare monitoring and future product design will be explored. Prereq: BIEN 4700/5700.

**BIEN 5320. Biomedical Instrumentation Design. 3 cr. hrs.**

Problems in instrumentation relating to physiological measurements in the laboratory and clinic. Electronic devices for stimulus as well as measurement of physiological quantities. Design of actual instruments. Features include mechanical design, accessory design and safety requirements.

**BIEN 5400. Transport Phenomena. 3 cr. hrs.**

Applications of mass, momentum, and mechanical energy balances to biomedical fluid systems. Study of physiological phenomena with an emphasis on cardiovascular systems and blood rheology.

**BIEN 5410. Applied Finite Element Analysis. 3 cr. hrs.**

Introduces the finite element solution method for linear, static problems. Includes calculation of element stiffness matrices, assembly of global stiffness matrices, exposure to various finite element solution methods, and numerical integration. Emphasizes structural mechanics, and also discusses heat transfer and fluid mechanics applications in finite element analysis. Computer assignments include development of finite element code (FORTRAN or C) and also use of commercial finite element software (ANSYS and/or MARC).

**BIEN 5420. Biomaterials Science and Engineering. 3 cr. hrs.**

Designed to introduce the uses of materials in the human body for the purposes of healing, correcting deformities and restoring lost function. The science aspect of the course encompasses topics including: characterization of material properties, biocompatibility and past and current uses of materials for novel devices that are both biocompatible and functional for the life of the implanted device. Projects allow students to focus and gain knowledge in an area of biomaterials engineering in which they are interested. Prereq: MEEN 2460 or cons. of instr.
BIEN 5500. Medical Imaging Physics. 3 cr. hrs.
Examines how light, X-rays, radiopharmaceuticals, ultrasound, magnetic fields, and other energy probes are generated and how they interact with tissues and detectors to produce useful image contrast. Addresses practical issues such as beam generation, dose limitations, patient motion, spatial resolution and dynamic range limitations, and cost-effectiveness. Emphasizes diagnostic radiological imaging physics, including the planar X-ray, digital subtraction angiography mammography, computed tomography, nuclear medicine, ultrasound, and magnetic resonance imaging modalities.

BIEN 5510. Image Processing for the Biomedical Sciences. 3 cr. hrs.
Introduces biomedical image processing. Topics explored include: the human visual system, spatial sampling and digitization, image transforms, spatial filtering, Fourier analysis, image enhancement and restoration, nonlinear and adaptive filters, color image processing, geometrical operations and morphological filtering, image coding and compression image segmentation, feature extraction and object classification. Applications in diagnostic medicine, biology and biomedical research are emphasized and presented as illustrative examples.

BIEN 5600. Neural Engineering. 3 cr. hrs.
Basic principles of neural engineering, properties of excitable tissues, quantitative models used to examine the mechanisms of natural and artificial stimulation. Basic concepts for the design of neuroprosthetic devices for sensory, motor and therapeutic applications. Design issues including electrode type, biomaterials, tissue response to stimulating electrodes and stimulus parameters for electrical stimulation and artificial control. Examples of how engineering interfaces with neural tissue show increasing promise in the rehabilitation of individuals of neural impairment.

BIEN 5610. Introduction to Rehabilitation Robotics. 3 cr. hrs.
Presents the fundamentals of robotics as it is applied to rehabilitation engineering. Specific topics include: the fundamentals of analysis and design of robot manipulators with examples and mini-projects taken from rehabilitation applications pertaining to robotic therapy devices and personal assistants. Additional topics include: overview of rehabilitation robotics field, human-centered design of rehabilitation robots issues and challenges, robot configurations, rigid motions and homogeneous transformations, Denavit-Hartenberg representation, robot kinematics, and inverse kinematics, Euler-Lagrange equations, trajectory generation, sensors, actuators, independent joint control, force control and safety.

BIEN 5620. Rehabilitation Engineering: Telerehabilitation Research Tools. 3 cr. hrs.
Introduces rehabilitation science as the study of tissue and functional change, including: overview of key human sensory modalities and neuromotor systems in the context of functional capabilities and human performance metrics; review of spontaneous recovery mechanisms in response to various types of tissue trauma; review of roles of genetics and gene transcription networks in pathology and functional recovery prognosis; and the concept of rehabilitative assessment and therapeutic interventions as an optimization problem. Also focuses on the use of assistive technology to enhance access to independent living and to optimize the delivery of rehabilitative healthcare services. Includes rehabilitation biomechanics of physical interfaces, use of access and usability engineering in product design and innovative assessment and intervention strategies for neurorehabilitation.

BIEN 5630. Rehabilitation Engineering: Prosthetics, Orthotics, Seating and Positioning. 3 cr. hrs.
Presents an overview of biomedical engineering as it applies to Rehabilitation Engineering, specifically, the design and prescription of prosthetic limbs, orthotic devices, and seating and positioning systems. Topics include medical terminology, musculoskeletal anatomy, muscle mechanics, soft tissue mechanics, gait/locomotion, amputation surgery, lower extremity prosthetics, lower extremity orthotics, hand function, electromyography, upper extremity prosthetics, upper extremity orthotics, seating and positioning and assistive devices.

BIEN 5640. Bioengineering of Living Actuators. 3 cr. hrs.
Overview of muscle tissue as a living actuator from the perspective of engineering design, systems biology, muscle modeling and adaptive control. Prereq: BIEN 4700/5700.

BIEN 5670. Systems Physiology. 3 cr. hrs.
Analyses of the underlying physiologic and bioengineering aspects of the major cell and organ systems of the human from an engineer's point of view. Classic physiologic approaches used to introduce topics including cell functions, nervous system, nerve, muscle, heart, circulation, respiratory system, kidney, reproduction and biomechanics. Design problems including models of cell-organ-system function and problems in biomechanics illuminate topics covered. Computer techniques and relevant instrumentation are incorporated. Experts on related topics are invited to speak as they are available.

BIEN 5671. Analysis of Physiological Models. 3 cr. hrs.
Development of continuous (compartmental) and distributed-in-space-and-time mathematical models of physiological systems and molecular events. Analytical and numerical methods for solving differential equations of the initial and boundary value types. Simulation of model response, and estimation of model parameters using linear and nonlinear regression analysis.

BIEN 5672. Cardiopulmonary Mechanics. 3 cr. hrs.
Examination of the physiological behavior of the cardiovascular and pulmonary systems from an engineering perspective. Emphasis is on understanding the mechanical basis of physiologic phenomena via experimental models.

BIEN 5931. Topics in Biomedical Engineering. 1-3 cr. hrs.
Course content announced prior to each term. Students may enroll in the course more than once as subject matter changes. Possible topics include biomechanics, experimental methods, neuroanatomy, telemetry, etc.

BIEN 6120. Introduction to the Finite Element Method. 3 cr. hrs.
Introduces finite element analysis as applied to linear, static problems. Application to problems in plane strain, plane stress, and axisymmetry. Development of shape functions and element stiffness matrices. Although primarily structural analysis, also considers problems in heat transfer and fluid mechanics. Use of user-written and packaged software. Prereq: GEEN 2130; and matrix/linear algebra or equiv.
BIEN 6121. Applied Finite Element Analysis and Modeling. 3 cr. hrs.
Advanced finite element analysis as applied to nonlinear (both material and geometric nonlinearities), dynamic problems. Use of penalty methods and perturbed Lagrangian methods. Use of user-written and packaged software. Critical reviews of finite element analysis in biomechanical research. Prereq: BIEN 6120; or CEEN 6120 or equiv.

BIEN 6200. Biomedical Signal Processing. 3 cr. hrs.
Introduces students to statistical processing of biomedical data. Topics include: data acquisition, probability and estimation, signal averaging, power spectrum analysis, windowing, digital filters and data compression. Students complete several computer projects which apply these processing methods to physiologic signals. Prereq; MATH 2451; and proficiency in C or FORTRAN.

BIEN 6210. Advanced Biomedical Signal Processing. 3 cr. hrs.
Covers modern methods of signal processing encountered in the bio-medical field including parametric modeling, modern spectral estimation, multivariate analysis, adaptive signal processing, decimation/interpolation, and two-dimensional signal analysis. Students complete several computer projects which apply these modern techniques to physiologic data. Prereq: BIEN 6200 or equiv.; knowledge of C or FORTRAN.

BIEN 6220. Multidimensional Biomedical Time Series Analysis. 3 cr. hrs.
Theory and implementation of methods used to collect, model and analyze multidimensional time series encountered in biomedical applications such as functional imaging, electrophysiologic mapping and the study of physiologic control systems. Prereq: BIEN 6200; proficiency in C or FORTRAN.

BIEN 6300. Biomedical Instrumentation. 3 cr. hrs.
Explores relationships between instruments for physiologic measurement and monitoring with living systems. Physiologic signals, noise, and available sensors and transducers and their characteristics are discussed from time and frequency domain points of view. Systems topics include various new and conventional medical instrumentation. Other topics include clinical and new clinical laboratory instrumentation, instrumentation for research, artificial organs and prostheses. Includes the use of scientific literature, literature searches, design projects, computer projects. Prereq: BIEN 5700; or BIEN 5320 and high level computer language or equiv.

BIEN 6310. Microprocessor Based Biomedical Instrumentation. 3 cr. hrs.
Discusses the application of microprocessors, microcontrollers, and digital signal processors to biomedical instrumentation. Complements BIEN 6300, which covers transducers, sensors, analog signal conditioning, and analog to digital conversion. Emphasizes evaluating the memory, power, resolution, cost, and computational requirements of a particular application, and then selecting a type (microprocessor, microcontroller, or digital signal processor) and particular model of processor to satisfy the system requirements. Students design at least two complete processor based systems. Prereq: Knowledge of digital electronics and microprocessors.

BIEN 6320. Radio Frequency Applications in Biomedical Engineering. 3 cr. hrs.
Radio frequency design and applications for biomedical engineering and medicine. Circuit elements, equivalent circuits, impedance transformations, Smith Chart, two ports, scattering parameters, amplifiers, resonant circuits, mixers, receivers. Applications include telemetry, transcutaneous power transfer, hyperthermia, rf ablation, magnetic resonance imaging; HP-EESOF LIBRA and Ascent CAD are introduced as analysis and design tools. Guest speakers. Written and oral design reports. Prereq: Undergraduate background in circuit theory and analog electronics.

BIEN 6400. Biofluid Mechanics. 3 cr. hrs.
Development of the theory of fluid mechanics as applied to living systems. Considers both steady and unsteady flows of Newtonian and non-Newtonian fluids. Topics include: viscometry, blood flow, gas and aerosolflows, pulsatile flow and wave propagation and applications to the understanding of flows in organs and to the measurement of blood pressure and flow. Prereq: BIEN 4400 or equiv.; or MEEN 3320 or CEEN 3150.

BIEN 6410. Biological Mass Transfer. 3 cr. hrs.
Development of the theory of mass transfer. Fick's law and free diffusion. Osmosis, facilitated diffusion, active transport, transport across cell membranes and applications to cell biology and organ physiology.

BIEN 6420. Biomechanical and Biomaterial Systems Analysis. 3 cr. hrs.
Using fundamentals of biomaterials engineering and biocompatibility, analyzes the functions that organs serve and to analyze the efficacy and safety of artificial organs systems. Some organs/tissues discussed include the kidneys, liver, skeleton, skin, heart, muscles, eyes, and ears. Critically examines the suitability of state-of-the-art artificial organ systems, including artificial hearts, orthopaedic prostheses, kidney dialyzers, and cochlear devices to fulfill the functions of the replaced organs/tissues. Prereq: BIEN 5420.

BIEN 6440. Biomedical Engineering Analysis of Trauma. 3 cr. hrs.
An engineering analysis of the physiological changes following impact to the head, spinal cord, and limbs, and electrical events and effects on tissues are treated.

BIEN 6450. Musculoskeletal Biomechanics 1. 3 cr. hrs.
Emphasizes the interrelationship of force and motion as related to anatomic structure and function. Examines the forces and motions acting in the skeletal system and the various techniques used to describe them. Highlights current concepts as revealed in the recent scientific and engineering literature. Topics include: bone mechanics, joint mechanics, gait kinematics, instrumentation and measurement of biomechanical phenomena, and computer modeling of the musculoskeletal system. Prereq: GEEN 2120 and GEEN 2130.

BIEN 6451. Musculoskeletal Biomechanics 2. 3 cr. hrs.
Advanced concepts of kinematics and mechanics as they apply to the fields of biomechanics and rehabilitation. Covers aspects of gait, bone and joint surgery, and soft tissue surgery. Detailed study of joint mechanics, implant applications and mobility device function is performed. Includes advanced analysis and modeling as well as laboratory-based final project. Prereq: BIEN 6450.
BIEN 6470. Biomechanics of the Spine. 3 cr. hrs.
Analyses anatomical and functional relationships among the hard and soft tissue structures of the spine as a function of vertebral column development, aging, disease and trauma. Emphasis given to the mechanisms of external and internal load transfer. Imaging (e.g., CT), experimental and finite element methods are used to study the effects of physiologic/traumatic loading, surgery and spinal disorders. Discusses current advancements in biomechanical/clinical literature.

BIEN 6500. Mathematics of Medical Imaging. 3 cr. hrs.
 Begins with an overview of the application of linear systems theory to radiographic imaging (pinhole imaging, transmission and emission tomography), and covers the mathematics of computed tomography including the analytic theory of reconstructing from projections and extensions to emission computed tomography and magnetic resonance imaging. Topics may also include three-dimensional imaging, noise analysis and image quality, and optimization. Contains advanced mathematical content.

BIEN 6600. Neuromotor Control. 3 cr. hrs.
Overview of current issues in neuromotor control and movement biomechanics. Special emphasis on the study of normal and impaired human movement. Topics include: muscle mechanics, biomechanics of movement, neural circuitry, strategies for the neural control of movement (including a discussion of adaptation and motor learning) and potential applications of biomedical engineering techniques to the study and improvement of impaired motor function. Prereq: BIEN 3300 which may be taken concurrently or equiv.; or cons. of instr.

BIEN 6610. Rehabilitative Biosystems. 3 cr. hrs.
Examines the plastic changes in biological systems that occur in response to targeted stimuli. These processes involve responses by cells to chemical, mechanical, or electrical stimuli (which may be related), which may be influenced or directed using engineering techniques. Examines the homeostasis of physiologic systems and their response to pathologic and rehabilitative stimuli. Examines engineering applications involving the diagnosis and rehabilitation of musculoskeletal, neurologic and cardiopulmonary biosystems in the context of the underlying cellular mechanisms. Prereq: BIEN 5700 which may be taken concurrently; and PHYS 1004.

BIEN 6620. Modeling Rehabilitative Biosystems. 3 cr. hrs.
Introduction to large-scale mathematical models of various physiological systems of interest in rehabilitation (e.g., cardiovascular, pulmonary, musculoskeletal, etc.). Discusses mathematical modeling, a widely used tool for testing hypotheses regarding the underlying mechanisms of complex systems such as physiological systems in health, disease and recovery. For each, simulation is used to further our understanding of the adaptive processes of these systems in response to physiological/pathophysiological stresses and rehabilitative interventions. Prereq: BIEN 5710 and BIEN 5700.

BIEN 6700. Analysis of Physiological Systems. 3 cr. hrs.

BIEN 6710. Cellular and Molecular Bioengineering. 3 cr. hrs.
Main topics include: cellular biomechanics with an emphasis on the cardiovascular system, molecular bioengineering, biotransport phenomena, and tissue engineering with focus on artificial internal organs. Cellular biomechanics topics covered are biomechanics of the endothelium, endothelial-immune cell interactions, and blood cell structural biomechanics. Topics in molecular bioengineering include chemotaxis and chemokinesis, and modeling of receptor-mediated endocytosis. Biotransport and tissue engineering topics include bioreactor design and the analysis and development of artificial internal organs like the liver and pancreas.

BIEN 6931. Topics in Biomedical Engineering. 3 cr. hrs.
Subject matter variable as determined by needs of biomedical graduate students. Students may enroll more than once as the subject matter changes. Possible topics: biostatistics, experimental methods, neuro-anatomy, etc.

BIEN 6932. Advanced Topics in Biomedical Engineering. 3 cr. hrs.
Advanced topics in design and analysis of biomedical instruments, devices and interfaces. Project approach drawing from current literature and current projects of laboratories of affiliated institutions. Topics include bioelectronics, biomechanics, biomaterials, and rehabilitation engineering.

BIEN 6947. Medical College of Wisconsin/Joint Degree. 1-8 cr. hrs.
Graduate-level course in selected areas of the life sciences offered at the Medical College of Wisconsin. May be taken by doctorate BIEN students at Marquette University. Prereq: Cons. of dept. ch.

BIEN 6953. Seminar in Biomedical Engineering. 0 cr. hrs.
Scholarly presentations on current topics in biomedical engineering and related areas by visiting professors, resident faculty and graduate students. Attendance is required of all full-time graduate students. SNC/UNC grade assessment. Mandatory for all full-time BIEN graduate students.

BIEN 6954. Seminar in Biomedical Computing. 0 cr. hrs.
Scholarly presentations on current topics in biomedical engineering and related areas by visiting professors, resident faculty and graduate students. Attendance is required of all full-time graduate students. SNC/UNC grade assessment. Mandatory for all full-time BIEN graduate students.

BIEN 6960. Seminar: Journal Club. 0-3 cr. hrs.
0 credit will be SNC/UNC grade assessment; 1-3 credits will be graded.

BIEN 6995. Independent Study in Biomedical Engineering. 1-3 cr. hrs.
Prereq: Cons. of instr. and cons. of dept. ch.

BIEN 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of instr.
BIEN 8110. Research Methodologies 1. 3 cr. hrs.
Development of research aims and hypotheses, identification of relevant scientific literature, experimental approaches, statistical design, and pilot work to obtain preliminary results. Emphasizes written communication of research theme. The course project consists of the development of a research proposal including research aims, background, pilot experiments, and experimental design and methodology. Prereq: Accepted Ph.D. student in biomedical engineering.

BIEN 8120. Research Methodologies 2. 3 cr. hrs.
Oral and written communication of research results including graphics and text. Addresses graphical presentation of data and conceptual development of a scientific presentation and a manuscript. Emphasizes the basics of clear and effective scientific communication. Work culminates in the development of a scientific manuscript for peer review. Prereq: Accepted Ph.D. student in biomedical engineering.

BIEN 8210. Teaching Methodologies. 3 cr. hrs.
Seminar aimed at issues important for teaching in a university setting. Topics include: development of teaching philosophy, planning a class, designing a syllabus, assessing student learning and using technology in the classroom. Taught in conjunction with the Preparing Future Faculty (PFF) program. Prereq: Accepted Ph.D. student in biomedical engineering.

BIEN 8995. Independent Study in Biomedical Engineering. 1-3 cr. hrs.
In-depth research on a topic or subject matter usually not offered in the established curriculum with faculty and independent of the classroom setting. Prereq: Cons. of instr. and cons. of dept. ch.

BIEN 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of instr.

BIEN 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
BIEN 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

BIEN 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Civil Engineering (CIEN)

Chairperson: Daniel Zitomer, Ph.D., P.E.
Civil Engineering Graduate Programs website (http://www.marquette.edu/engineering/civil_environmental/grad.shtml/)

Degrees Offered
Master of Science; Doctor of Philosophy; Certificate

Mission Statement
The mission of the Department of Civil, Construction and Environmental Engineering is to educate students in the Catholic, Jesuit tradition. These students will be competent in their technical fields, appreciate the moral and ethical impact of their professional work, and continue their professional development throughout their careers. They will advance the state of technical and scientific knowledge through research and provide service to civic and professional communities.

Program Descriptions
The Department of Civil, Construction and Environmental Engineering offers master of science and doctor of philosophy degree programs (https://www.marquette.edu/grad/programs-civil-engineering.php) designed to provide graduate students with both broad fundamental knowledge and up-to-date information on current and emerging technologies. Students may enroll on either a full-time or part-time basis. Doctoral students and research-oriented master’s students (e.g., Plan A) engage in research activities under the close supervision of their advisers, gradually learning to become independent researchers. Their projects are often supported by government and industry grants. Courses and research projects make significant use of the department’s extensive laboratory and computational facilities. Graduates find employment in industry, government, academia and research laboratories.

The Department also offers a graduate certificate in environmental engineering, designed for practicing professionals. Students typically enroll on a part-time basis. The environmental engineering certificate is designed to develop graduates with the skills required to solve complex environmental engineering problems in order to protect public health and the environment. The certificate will offer students the opportunity to explore a greater technical understanding of problems associated with air, land, and water resources in both urban and rural communities. Graduates of this program are likely to find positions in a wide range of organizations including governmental agencies, municipal engineering departments, consulting engineer companies, construction companies, as well as a wide range of industries.

Prerequisites for Admission
Applicants should have graduated with, or be about to graduate with, a baccalaureate degree in an appropriate area of study from an accredited institution. In addition, doctoral applicants are required to have earned a master’s degree in a related field. (In some instances, exceptional applicants may be considered for entry into the doctoral program without a master’s degree.)

Application Requirements
Master’s and doctoral program applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except those from Marquette.
3. Three letters of recommendation.
4. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.
5. (For doctoral and all international applicants) GRE scores (General Test only).
6. The GRE is recommended for, and may be requested of, master’s applicants with undergraduate grade point averages less than 3.000 out of 4.000.
7. (For doctoral applicants only) a brief statement of purpose.
8. (For doctoral applicants only) submission of any English-language publications authored by the applicant is optional, but strongly recommended; this includes any master’s thesis or essay that the applicant may have written.

Certificate program applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except those from Marquette.
3. Two letters of recommendation addressing the applicant’s suitability for completing graduate-level course work: one from a professor familiar with the student’s academic achievement and one from a work supervisor (engineer) or another professor. Waived if the applicant’s GPA is 3.000 or above.
4. Statement of purpose, describing reasons for pursuing an advanced degree and career goals.
5. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.
Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

Research Activities

The Department of Civil, Construction and Environmental Engineering maintains laboratories related to studies in construction engineering, hydraulics, environmental engineering, engineering materials and structural testing, as well as computational facilities. The Construction Automation Laboratory, Engineering Materials and Structural Testing Laboratory, Transportation Research Center and Water Quality Center are associated with the department.

Research interests of the faculty include the following, listed by specialization:

Construction Engineering (CNEN): advanced technology applications in construction, lean construction practices, management of construction processes, modeling of construction projects, virtual design and construction, bridge repair and replacement, on-site productivity measurement and improvement, highway work-zone safety and international construction management;

Environmental and Water Resources Engineering (ENWR): anaerobic biotechnology, wastewater treatment, analytical chemistry, physical/chemical water treatment, fate and impacts of emerging contaminants, antibiotic resistance, pyrolysis, nutrient recovery, environmental microbiology, advanced oxidation processes, sustainability and life-cycle cost analysis, hydrologic modeling, green stormwater infrastructure, geographic information systems, flood frequency analysis, real-time control of stormwater systems;

Structural Engineering and Structural Mechanics (SESM): retrofit and repair of structures using fiber-reinforced polymers, prestressed concrete, reliability-based performance assessment of civil infrastructure, health monitoring of civil infrastructure, performance-based engineering, ground motion simulation validation, climate change mitigation and adaptation, sustainable and resilient infrastructure, structural mechanics modeling of microstructures for chemical/biosensing and energy-harvesting applications;

Transportation Engineering and Materials (TEMA): transportation systems operations and maintenance (TSM&O), data analysis and visualization, health care access, smart communities, pavement mechanics, modeling of flexible and rigid pavements, tire-pavement interaction, micromechanical modeling of asphalt concrete, pavement damage.

Civil Engineering Master’s Requirements

Specializations: Construction Engineering (CNEN), Environmental and Water Resources Engineering (ENWR), Structural Engineering and Structural Mechanics (SESM), Transportation Engineering and Materials (TEMA)

Upon enrolling in the master of science program in civil engineering, a student may complete a general course of study or select one of four areas of specialization: construction engineering (CNEN), environmental and water resources engineering (ENWR), structural engineering and structural mechanics (SESM), or transportation engineering and materials (TEMA).

During the first term, a Master’s Program Planning Form (MPPF) should be completed by the student in consultation with the student's faculty adviser, thereby enabling the student to declare the Plan A (thesis) or Plan B (non-thesis, i.e., course work) option, while also ensuring that the student is aware of the master’s degree requirements for the option chosen.

If Plan A is chosen, the student and faculty adviser should discuss plans for thesis research during the first or second term of study. After the thesis topic is defined, the student should submit a thesis outline that is approved by the entire thesis committee. This document serves as an agreement between the student and the committee regarding the expectations of the thesis content, including the motivation, objectives and scope of the proposed study. The outline should also place the proposed work within the context of other related studies. Toward the final phase of performing the thesis research and writing the thesis, a Plan A student should consult with the faculty adviser to schedule the thesis defense. The defense typically occurs during the final term of the M.S. program before a three-person M.S. thesis committee. If Plan B is chosen, the student should consult with the faculty adviser during the final term of the program to schedule the M.S. comprehensive exam. The comprehensive exam for a Plan B student is usually an oral exam, administered by a two- or three-person faculty committee. The scope of the Plan B comprehensive exam may span the student’s entire body of course work. Regardless of the plan chosen, the master of science program is designed specifically to meet the goals of the individual student.

Thesis Option (Plan A)

The academic requirements for the thesis option (Plan A) of the master of science in civil engineering are the following:

- A minimum of 24 credit hours of course work at the graduate level (5000 or above).
- A minimum of 12 credit hours of course work must be at the 6000 level or above.
- A minimum of 18 credit hours of the total course work must be taken from the course offerings of the Department of Civil, Construction and Environmental Engineering.
- For those students who have declared a specialization, a minimum of 12 credit hours must be taken from a list of approved courses within the specialization. (See the appropriate table below.)
- Six (6) credit hours of thesis work, completion of an oral thesis defense/comprehensive exam and submission of an approved thesis.
• Normally, no more than six (6) credit hours of Independent Study course work (CEEN 6995) can be included in the master of science program.
• A maximum of nine (9) credit hours of graduate-level course work from other approved institutions may be accepted toward the requirements of the degree, provided that all conditions of the Marquette University Graduate School’s transfer-credit policy are met.
• A maximum of 12 credit hours of graduate-level course work from a Marquette University graduate certificate program in a related area may be accepted toward the requirements of the degree, provided that all conditions of the Marquette University Graduate School’s transfer-credit policy are met.
• All graduate students must maintain a 3.000 cumulative GPA to graduate. Determination of the cumulative GPA is based on all courses taken at Marquette University during a student’s graduate career, including prerequisite and repeated courses, if any.

Non-Thesis (Course Work) Option (Plan B)

The academic requirements for the non-thesis (course work) option (Plan B) of the master of science in civil engineering are the following:

• A minimum of 30 credit hours of course work at the graduate level (5000 or above).
• A minimum of 12 credit hours of course work must be at the 6000 level or above.
• A minimum of 18 credit hours of the total course work must be taken from the course offerings of the Department of Civil, Construction and Environmental Engineering.
• For those students who have declared a specialization, a minimum of 12 credit hours must be taken from a list of approved courses within the specialization. (See the appropriate table below.)
• Successful completion of an oral comprehensive examination, usually administered during the final semester of the program. Scheduling of the exam is performed by the student in consultation with the student’s faculty adviser.
• Normally, no more than six (6) credit hours of Independent Study course work (CEEN 6995) can be included in the master of science program.
• A maximum of nine (9) credit hours of graduate-level course work from other approved institutions may be accepted toward the requirements of the degree, provided that all conditions of the Marquette University Graduate School’s transfer-credit policy are met.
• A maximum of 12 credit hours of graduate-level course work from a Marquette University graduate certificate program in a related area may be accepted toward the requirements of the degree, provided that all conditions of the Marquette University Graduate School’s transfer-credit policy are met.
• All graduate students must maintain a 3.000 cumulative GPA to graduate. Determination of the cumulative GPA is based on all courses taken at Marquette University during a student’s graduate career, including prerequisite and repeated courses, if any.

Plan A Course Requirements

If no specialization is chosen, Plan A students must complete:

Required course work (24 credit hours) chosen from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEEN 5145</td>
<td>Advanced Strength and Applied Stress Analysis</td>
</tr>
<tr>
<td>CEEN 5230</td>
<td>Urban Hydrology and Stormwater Management</td>
</tr>
<tr>
<td>CEEN 5310</td>
<td>Geographical Information Systems in Engineering and Planning</td>
</tr>
<tr>
<td>CEEN 5320</td>
<td>Engineering Decisions Under Uncertainty</td>
</tr>
<tr>
<td>CEEN 5340</td>
<td>Urban Planning for Civil Engineers</td>
</tr>
<tr>
<td>CEEN 5350</td>
<td>Law for Engineers</td>
</tr>
<tr>
<td>CEEN 5411</td>
<td>Matrix Structural Analysis</td>
</tr>
<tr>
<td>CEEN 5431</td>
<td>Advanced Structural Steel Design</td>
</tr>
<tr>
<td>CEEN 5441</td>
<td>Advanced Reinforced Concrete Design</td>
</tr>
<tr>
<td>CEEN 5450</td>
<td>Bridge Design</td>
</tr>
<tr>
<td>CEEN 5460</td>
<td>Foundation Engineering</td>
</tr>
<tr>
<td>CEEN 5515</td>
<td>Environmental Chemistry</td>
</tr>
<tr>
<td>CEEN 5520</td>
<td>Industrial Wastewater Management</td>
</tr>
<tr>
<td>CEEN 5525</td>
<td>Treatment Plant Design and Operation</td>
</tr>
<tr>
<td>CEEN 5530</td>
<td>Hazardous and Industrial Waste Management</td>
</tr>
<tr>
<td>CEEN 5535</td>
<td>Environmental Engineering Microbiology</td>
</tr>
<tr>
<td>CEEN 5550</td>
<td>Water Resources Planning and Management</td>
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<tr>
<td>CEEN 5560</td>
<td>Environmental Fate and Transport</td>
</tr>
<tr>
<td>CEEN 5615</td>
<td>Highway Planning and Design</td>
</tr>
<tr>
<td>CEEN 5630</td>
<td>Airport Planning and Design</td>
</tr>
<tr>
<td>CEEN 5640</td>
<td>Traffic Characteristics and Design</td>
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<tr>
<td>CEEN 5650</td>
<td>Pavement Design</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>CEEN 5660</td>
<td>Pavement Management</td>
</tr>
<tr>
<td>CEEN 5670</td>
<td>Advanced Transportation Materials</td>
</tr>
<tr>
<td>CEEN 5715</td>
<td>Sustainable Engineering</td>
</tr>
<tr>
<td>CEEN 5815</td>
<td>Mechanical and Electrical Systems for Buildings</td>
</tr>
<tr>
<td>CEEN 5830</td>
<td>Construction Planning, Scheduling, and Control</td>
</tr>
<tr>
<td>CEEN 5840</td>
<td>Construction Cost Analysis and Estimating</td>
</tr>
<tr>
<td>CEEN 5845</td>
<td>Construction Equipment and Methods</td>
</tr>
<tr>
<td>CEEN 5850</td>
<td>FRP in Civil Engineering Infrastructure</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6110</td>
<td>Theory of Elasticity</td>
</tr>
<tr>
<td>CEEN 6120</td>
<td>Introduction to the Finite Element Method</td>
</tr>
<tr>
<td>CEEN 6121</td>
<td>Applied Finite Element Analysis and Modeling</td>
</tr>
<tr>
<td>CEEN 6340</td>
<td>Advanced Hydrology</td>
</tr>
<tr>
<td>CEEN 6350</td>
<td>Modeling in Water Resources Engineering</td>
</tr>
<tr>
<td>CEEN 6410</td>
<td>Numerical Analysis with Structural Application</td>
</tr>
<tr>
<td>CEEN 6420</td>
<td>Nonlinear Structural Analysis</td>
</tr>
<tr>
<td>CEEN 6425</td>
<td>Earthquake Engineering</td>
</tr>
<tr>
<td>CEEN 6435</td>
<td>Structural Dynamics</td>
</tr>
<tr>
<td>CEEN 6460</td>
<td>Engineering Reliability</td>
</tr>
<tr>
<td>CEEN 6470</td>
<td>Performance-Based Engineering</td>
</tr>
<tr>
<td>CEEN 6510</td>
<td>Biochemical Transformations in the Environment</td>
</tr>
<tr>
<td>CEEN 6520</td>
<td>Environmental Laboratory 1 - Analyses</td>
</tr>
<tr>
<td>CEEN 6521</td>
<td>Environmental Laboratory 2 - Processes</td>
</tr>
<tr>
<td>CEEN 6530</td>
<td>Hazardous Waste Remediation Technologies</td>
</tr>
<tr>
<td>CEEN 6540</td>
<td>Physical and Chemical Processes of Environmental Engineering</td>
</tr>
<tr>
<td>CEEN 6560</td>
<td>Fate of Micropolllutants</td>
</tr>
<tr>
<td>CEEN 6610</td>
<td>Advanced Traffic Operations Analysis and Design</td>
</tr>
<tr>
<td>CEEN 6620</td>
<td>Urban Facility Design</td>
</tr>
<tr>
<td>CEEN 6635</td>
<td>Highway Interchange Design</td>
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<td>CEEN 6650</td>
<td>Bituminous Materials</td>
</tr>
<tr>
<td>CEEN 6655</td>
<td>Transportation Soils</td>
</tr>
<tr>
<td>CEEN 6660</td>
<td>Advanced Pavement Design</td>
</tr>
<tr>
<td>CEEN 6840</td>
<td>Infrastructure Information Modeling</td>
</tr>
<tr>
<td>CEEN 6860</td>
<td>GIS Applications in Water Resources Engineering</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6953</td>
<td>Graduate Seminar in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering</td>
</tr>
</tbody>
</table>

Additional courses as approved by adviser and the CCEE director of graduate studies

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEEN 6999</td>
<td>Master's Thesis</td>
</tr>
</tbody>
</table>

M.S. Thesis Defense and Submission of Approved Thesis 0

Total Credit Hours 30

For the Construction Engineering (CNEN) specialization, Plan A students must complete:

Required specialization course work (12 credits minimum) chosen from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEEN 5320</td>
<td>Engineering Decisions Under Uncertainty</td>
</tr>
<tr>
<td>CEEN 5340</td>
<td>Urban Planning for Civil Engineers</td>
</tr>
<tr>
<td>CEEN 5350</td>
<td>Law for Engineers</td>
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<tr>
<td>CEEN 5840</td>
<td>Construction Cost Analysis and Estimating</td>
</tr>
<tr>
<td>CEEN 5845</td>
<td>Construction Equipment and Methods</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
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</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering (CNEN)</td>
</tr>
<tr>
<td>CEEN 6460</td>
<td>Engineering Reliability</td>
</tr>
<tr>
<td>CEEN 6840</td>
<td>Infrastructure Information Modeling</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering (CNEN)</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering (CNEN)</td>
</tr>
</tbody>
</table>

Additional courses within the specialization as approved by adviser and the CCEE director of graduate studies

Remaining courses chosen from the following or from the list above: 12

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CEEN 5460</td>
<td>Foundation Engineering</td>
</tr>
<tr>
<td>CEEN 5715</td>
<td>Sustainable Engineering</td>
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<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6470</td>
<td>Performance-Based Engineering</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering</td>
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<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering</td>
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<tr>
<td>BUAD 6000</td>
<td>Accounting and Finance for the Non-Financial Manager</td>
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<tr>
<td>BUAD 6005</td>
<td>Economic Foundations for Marketing Decisions</td>
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<td>Data Mining</td>
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<td>COSC 6050</td>
<td>Elements of Software Development</td>
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<td>COSC 6931</td>
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<tr>
<td>ECON 6200</td>
<td>Economics for Management Decision Making</td>
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<tr>
<td>EECE 5650</td>
<td>Introduction to Algorithms</td>
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<td>EECE 5830</td>
<td>Introduction to Computer Graphics</td>
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<td>MSSC 5720</td>
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<td>MSSC 6020</td>
<td>Statistical Simulation</td>
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<tr>
<td>MSSC 6931</td>
<td>Topics in Mathematical or Statistical Sciences</td>
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Additional courses as approved by adviser and the CCEE director of graduate studies

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Total Credit Hours 30

1 Topics in CEEN 5931, CEEN 6932 and CEEN 6995 must pertain to the specialization of construction engineering.

For the Environmental and Water Resources Engineering (ENWR) specialization, Plan A students must complete:

Required specialization course work (12 credits minimum) chosen from the following: 12

<table>
<thead>
<tr>
<th>Course Code</th>
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<td>CEEN 5515</td>
<td>Environmental Chemistry</td>
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<td>CEEN 5520</td>
<td>Industrial Wastewater Management</td>
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<td>CEEN 5525</td>
<td>Treatment Plant Design and Operation</td>
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<tr>
<td>CEEN 5530</td>
<td>Hazardous and Industrial Waste Management</td>
</tr>
<tr>
<td>CEEN 5535</td>
<td>Environmental Engineering Microbiology</td>
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<td>CEEN 5550</td>
<td>Water Resources Planning and Management</td>
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<tr>
<td>CEEN 5560</td>
<td>Environmental Fate and Transport</td>
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<td>CEEN 5715</td>
<td>Sustainable Engineering</td>
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<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering (ENWR)</td>
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<tr>
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<td>Advanced Hydrology</td>
</tr>
<tr>
<td>CEEN 6350</td>
<td>Modeling in Water Resources Engineering</td>
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<tr>
<td>CEEN 6510</td>
<td>Biochemical Transformations in the Environment</td>
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<tr>
<td>CEEN 6520</td>
<td>Environmental Laboratory 1 - Analyses</td>
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<tr>
<td>CEEN 6521</td>
<td>Environmental Laboratory 2 - Processes</td>
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<td>CEEN 6540</td>
<td>Physical and Chemical Processes of Environmental Engineering</td>
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<td>CEEN 6560</td>
<td>Fate of Micropolutants</td>
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<tr>
<td>CEEN 6860</td>
<td>GIS Applications in Water Resources Engineering</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering (ENWR) ²</td>
</tr>
<tr>
<td>CEEN 6953</td>
<td>Graduate Seminar in Civil Engineering (ENWR) ²</td>
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<td>CEEN 6995</td>
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Additional courses within the specialization as approved by adviser and the CCEE director of graduate studies

Remaining courses chosen from the following or from the list above: 12

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<th>Course Code</th>
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<tr>
<td>CEEN 5320</td>
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<td>CEEN 5340</td>
<td>Urban Planning for Civil Engineers</td>
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<td>Law for Engineers</td>
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<td>Topics in Civil Engineering</td>
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<tr>
<td>CEEN 6460</td>
<td>Engineering Reliability</td>
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<td>Advanced Topics in Civil Engineering</td>
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<td>CEEN 6995</td>
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<td>BIOL 5102</td>
<td>Experimental Molecular Biology</td>
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<td>Physical Methods of Analysis</td>
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<td>Spectrochemical Methods of Analysis</td>
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<td>CHEM 6203</td>
<td>Electroanalytical Methods</td>
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<td>CHEM 6204</td>
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Additional courses as approved by adviser and the CCEE director of graduate studies

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</tr>
<tr>
<td>M.S.</td>
<td>Thesis Defense and Submission of Approved Thesis</td>
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</tbody>
</table>

Total Credit Hours 30

² Topics in CEEN 5931, CEEN 6932, CEEN 6953 and CEEN 6995 must pertain to the specialization of environmental and water resources engineering.

For the Structural Engineering and Structural Mechanics (SESM) specialization, Plan A students must complete:

Required specialization course work (12 credits minimum) chosen from the following: 12

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
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<td>Advanced Strength and Applied Stress Analysis</td>
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<tr>
<td>or MEEN 5230</td>
<td>Intermediate Mechanics of Materials</td>
</tr>
<tr>
<td>CEEN 5411</td>
<td>Matrix Structural Analysis</td>
</tr>
<tr>
<td>CEEN 5431</td>
<td>Advanced Structural Steel Design</td>
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<tr>
<td>CEEN 5441</td>
<td>Advanced Reinforced Concrete Design</td>
</tr>
<tr>
<td>CEEN 5450</td>
<td>Bridge Design</td>
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<td>CEEN 5460</td>
<td>Foundation Engineering</td>
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<tr>
<td>CEEN 5850</td>
<td>FRP in Civil Engineering Infrastructure</td>
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<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering (SESM) ³</td>
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<tr>
<td>CEEN 6110</td>
<td>Theory of Elasticity</td>
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<tr>
<td>CEEN 6120</td>
<td>Introduction to the Finite Element Method</td>
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<td>CEEN 6121</td>
<td>Applied Finite Element Analysis and Modeling</td>
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<td>CEEN 6410</td>
<td>Numerical Analysis with Structural Application</td>
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<td>CEEN 6420</td>
<td>Nonlinear Structural Analysis</td>
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<td>CEEN 6425</td>
<td>Earthquake Engineering</td>
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<td>Structural Dynamics</td>
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<tr>
<td>CEEN 6470</td>
<td>Performance-Based Engineering</td>
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<td>Course Code</td>
<td>Course Title</td>
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</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering (SESM)³</td>
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<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering (SESM)³</td>
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<tr>
<td>MEEN 6230</td>
<td>Advanced Mechanics of Materials</td>
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</table>

Additional courses within the specialization as approved by adviser and the CCEE director of graduate studies

Remaining courses chosen from the following or from the list above: 12

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<td>CEEN 5340</td>
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</tr>
<tr>
<td>CEEN 5350</td>
<td>Law for Engineers</td>
</tr>
<tr>
<td>CEEN 5715</td>
<td>Sustainable Engineering</td>
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<tr>
<td>CEEN 5830</td>
<td>Construction Planning, Scheduling, and Control</td>
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<td>CEEN 5840</td>
<td>Construction Cost Analysis and Estimating</td>
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<tr>
<td>CEEN 5845</td>
<td>Construction Equipment and Methods</td>
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<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering</td>
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<tr>
<td>CEEN 6460</td>
<td>Engineering Reliability</td>
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<tr>
<td>CEEN 6840</td>
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<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering</td>
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<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering</td>
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<tr>
<td>MEEN 5240</td>
<td>Polymers and Polymer Composites</td>
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<td>MEEN 5245</td>
<td>Fatigue and Fracture Mechanics</td>
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<tr>
<td>MEEN 5260</td>
<td>Introduction to Continuum Mechanics</td>
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<td>MEEN 5265</td>
<td>Intermediate Finite Element Methods</td>
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<td>MEEN 5420</td>
<td>Failure Analysis</td>
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<td>MEEN 5450</td>
<td>Mechanical Behavior of Materials</td>
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<td>Advanced Engineering Analysis 2</td>
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<td>MEEN 6103</td>
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<td>MSSC 5700</td>
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</table>

Additional courses as approved by adviser and the CCEE director of graduate studies

CEEN 6999    Master's Thesis 6
M.S. Thesis Defense and Submission of Approved Thesis 0

Total Credit Hours 30

³ Topics in CEEN 5931, CEEN 6932 and CEEN 6995 must pertain to the specialization of structural engineering and structural mechanics.

For the Transportation Engineering and Materials (TEMA) specialization, Plan A students must complete:

Required specialization course work (12 credits minimum) chosen from the following: 12

<table>
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<th>Course Code</th>
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<tbody>
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<td>CEEN 5630</td>
<td>Airport Planning and Design</td>
</tr>
<tr>
<td>CEEN 5640</td>
<td>Traffic Characteristics and Design</td>
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<tr>
<td>CEEN 5650</td>
<td>Pavement Design</td>
</tr>
<tr>
<td>CEEN 5660</td>
<td>Pavement Management</td>
</tr>
<tr>
<td>CEEN 5670</td>
<td>Advanced Transportation Materials</td>
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<td>CEEN 5931</td>
<td>Topics in Civil Engineering (TEMA)⁴</td>
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<td>Urban Facility Design</td>
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<td>CEEN 6650</td>
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### PLAN A COURSE REQUIREMENTS

Required course work (30 credit hours) chosen from the following:

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<tr>
<td>CEEN 6932</td>
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<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering (TEMA)</td>
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</table>

Additional courses within the specialization as approved by adviser and the CCEE director of graduate studies

Remaining courses chosen from the following or from the list above: 12

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CEEN 5230</td>
<td>Urban Hydrology and Stormwater Management</td>
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<td>CEEN 5310</td>
<td>Geographical Information Systems in Engineering and Planning</td>
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<td>Engineering Decisions Under Uncertainty</td>
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<tr>
<td>CEEN 5350</td>
<td>Law for Engineers</td>
</tr>
<tr>
<td>CEEN 5450</td>
<td>Bridge Design</td>
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<td>Construction Planning, Scheduling, and Control</td>
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<td>FRP in Civil Engineering Infrastructure</td>
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<td>Topics in Civil Engineering</td>
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<td>Infrastructure Information Modeling</td>
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Additional courses as approved by adviser and the CCEE director of graduate studies

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<tr>
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</table>

M.S. Thesis Defense and Submission of Approved Thesis 0

Total Credit Hours 30

*Topics in CEEN 5931, CEEN 6932 and CEEN 6995 must pertain to the specialization of transportation engineering and materials.*

### PLAN B COURSE REQUIREMENTS

If no specialization is chosen, Plan B students must complete:

Required course work (30 credit hours) chosen from the following:

<table>
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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CEEN 5145</td>
<td>Advanced Strength and Applied Stress Analysis</td>
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<td>Urban Hydrology and Stormwater Management</td>
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<td>CEEN 5310</td>
<td>Geographical Information Systems in Engineering and Planning</td>
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<tr>
<td>CEEN 5320</td>
<td>Engineering Decisions Under Uncertainty</td>
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<tr>
<td>CEEN 5340</td>
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<tr>
<td>CEEN 5411</td>
<td>Matrix Structural Analysis</td>
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<td>Water Resources Planning and Management</td>
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<td>Environmental Fate and Transport</td>
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Total Credit Hours 30
<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CEEN 5615</td>
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<td>CEEN 5630</td>
<td>Airport Planning and Design</td>
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<tr>
<td>CEEN 5640</td>
<td>Traffic Characteristics and Design</td>
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<td>CEEN 5650</td>
<td>Pavement Design</td>
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<tr>
<td>CEEN 5660</td>
<td>Pavement Management</td>
</tr>
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<td>CEEN 5670</td>
<td>Advanced Transportation Materials</td>
</tr>
<tr>
<td>CEEN 5715</td>
<td>Sustainable Engineering</td>
</tr>
<tr>
<td>CEEN 5815</td>
<td>Mechanical and Electrical Systems for Buildings</td>
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<td>CEEN 5830</td>
<td>Construction Planning, Scheduling, and Control</td>
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<td>Construction Cost Analysis and Estimating</td>
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<td>Construction Equipment and Methods</td>
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<tr>
<td>CEEN 5850</td>
<td>FRP in Civil Engineering Infrastructure</td>
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<td>CEEN 5931</td>
<td>Topics in Civil Engineering</td>
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<td>CEEN 6110</td>
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<td>CEEN 6120</td>
<td>Introduction to the Finite Element Method</td>
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<td>CEEN 6121</td>
<td>Applied Finite Element Analysis and Modeling</td>
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<td>Environmental Laboratory 2 - Processes</td>
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<td>CEEN 6530</td>
<td>Hazardous Waste Remediation Technologies</td>
</tr>
<tr>
<td>CEEN 6540</td>
<td>Physical and Chemical Processes of Environmental Engineering</td>
</tr>
<tr>
<td>CEEN 6560</td>
<td>Fate of Micropollutants</td>
</tr>
<tr>
<td>CEEN 6610</td>
<td>Advanced Traffic Operations Analysis and Design</td>
</tr>
<tr>
<td>CEEN 6620</td>
<td>Urban Facility Design</td>
</tr>
<tr>
<td>CEEN 6635</td>
<td>Highway Interchange Design</td>
</tr>
<tr>
<td>CEEN 6650</td>
<td>Bituminous Materials</td>
</tr>
<tr>
<td>CEEN 6655</td>
<td>Transportation Materials</td>
</tr>
<tr>
<td>CEEN 6660</td>
<td>Advanced Pavement Design</td>
</tr>
<tr>
<td>CEEN 6840</td>
<td>Infrastructure Information Modeling</td>
</tr>
<tr>
<td>CEEN 6860</td>
<td>GIS Applications in Water Resources Engineering</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6953</td>
<td>Graduate Seminar in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering</td>
</tr>
</tbody>
</table>

Additional courses as approved by adviser and the CCEE director of graduate studies

M.S. Oral Comprehensive Examination 0

Total Credit Hours 30

For the Construction Engineering (CNEN) specialization, Plan B students must complete:

Required specialization course work (12 credits minimum) chosen from the following: 12

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEEN 5320</td>
<td>Engineering Decisions Under Uncertainty</td>
</tr>
<tr>
<td>CEEN 5340</td>
<td>Urban Planning for Civil Engineers</td>
</tr>
<tr>
<td>CEEN 5350</td>
<td>Law for Engineers</td>
</tr>
<tr>
<td>CEEN 5660</td>
<td>Pavement Management</td>
</tr>
<tr>
<td>CEEN 5815</td>
<td>Mechanical and Electrical Systems for Buildings</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>CEEN 5830</td>
<td>Construction Planning, Scheduling, and Control</td>
</tr>
<tr>
<td>CEEN 5840</td>
<td>Construction Cost Analysis and Estimating</td>
</tr>
<tr>
<td>CEEN 5845</td>
<td>Construction Equipment and Methods</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering (CNEN)¹</td>
</tr>
<tr>
<td>CEEN 6460</td>
<td>Engineering Reliability</td>
</tr>
<tr>
<td>CEEN 6840</td>
<td>Infrastructure Information Modeling</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering (CNEN)¹</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering (CNEN)¹</td>
</tr>
</tbody>
</table>

Additional courses within the specialization as approved by adviser and the CCEE director of graduate studies

Remaining courses chosen from the following or from the list above: 18

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CEEN 5460</td>
<td>Foundation Engineering</td>
</tr>
<tr>
<td>CEEN 5715</td>
<td>Sustainable Engineering</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6470</td>
<td>Performance-Based Engineering</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering</td>
</tr>
<tr>
<td>BUAD 6000</td>
<td>Accounting and Finance for the Non-Financial Manager</td>
</tr>
<tr>
<td>BUAD 6005</td>
<td>Economic Foundations for Marketing Decisions</td>
</tr>
<tr>
<td>COSC 5610</td>
<td>Data Mining</td>
</tr>
<tr>
<td>COSC 6050</td>
<td>Elements of Software Development</td>
</tr>
<tr>
<td>COSC 6931</td>
<td>Topics in Computer Science</td>
</tr>
<tr>
<td>ECON 6200</td>
<td>Economics for Management Decision Making</td>
</tr>
<tr>
<td>EECE 5650</td>
<td>Introduction to Algorithms</td>
</tr>
<tr>
<td>EECE 5830</td>
<td>Introduction to Computer Graphics</td>
</tr>
<tr>
<td>MBA 6100</td>
<td>Business Analytics</td>
</tr>
<tr>
<td>MEEN 6101</td>
<td>Advanced Engineering Analysis 1</td>
</tr>
<tr>
<td>MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
</tr>
<tr>
<td>MEEN 6470</td>
<td>Statistical Methods in Engineering</td>
</tr>
<tr>
<td>MSSC 5700</td>
<td>Theory of Probability</td>
</tr>
<tr>
<td>MSSC 5720</td>
<td>Statistical Methods</td>
</tr>
<tr>
<td>MSSC 6020</td>
<td>Statistical Simulation</td>
</tr>
<tr>
<td>MSSC 6931</td>
<td>Topics in Mathematical or Statistical Sciences</td>
</tr>
</tbody>
</table>

Additional courses as approved by adviser and the CCEE director of graduate studies

M.S. Oral Comprehensive Examination 0

Total Credit Hours 30

¹ Topics in CEEN 5931, CEEN 6932 and CEEN 6995 must pertain to the specialization of construction engineering.

For the Environmental and Water Resources Engineering (ENWR) specialization, Plan B students must complete:

Required specialization course work (12 credits minimum) chosen from the following: 12

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEEN 5230</td>
<td>Urban Hydrology and Stormwater Management</td>
</tr>
<tr>
<td>CEEN 5515</td>
<td>Environmental Chemistry</td>
</tr>
<tr>
<td>CEEN 5520</td>
<td>Industrial Wastewater Management</td>
</tr>
<tr>
<td>CEEN 5525</td>
<td>Treatment Plant Design and Operation</td>
</tr>
<tr>
<td>CEEN 5530</td>
<td>Hazardous and Industrial Waste Management</td>
</tr>
<tr>
<td>CEEN 5535</td>
<td>Environmental Engineering Microbiology</td>
</tr>
<tr>
<td>CEEN 5550</td>
<td>Water Resources Planning and Management</td>
</tr>
<tr>
<td>CEEN 5560</td>
<td>Environmental Fate and Transport</td>
</tr>
<tr>
<td>CEEN 5715</td>
<td>Sustainable Engineering</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering (ENWR)²</td>
</tr>
<tr>
<td>CEEN 6340</td>
<td>Advanced Hydrology</td>
</tr>
<tr>
<td>CEEN 6350</td>
<td>Modeling in Water Resources Engineering</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------------------------------------------------</td>
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<tr>
<td>CEEN 6510</td>
<td>Biochemical Transformations in the Environment</td>
</tr>
<tr>
<td>CEEN 6520</td>
<td>Environmental Laboratory 1 - Analyses</td>
</tr>
<tr>
<td>CEEN 6521</td>
<td>Environmental Laboratory 2 - Processes</td>
</tr>
<tr>
<td>CEEN 6540</td>
<td>Physical and Chemical Processes of Environmental Engineering</td>
</tr>
<tr>
<td>CEEN 6560</td>
<td>Fate of Micropollutants</td>
</tr>
<tr>
<td>CEEN 6860</td>
<td>GIS Applications in Water Resources Engineering</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering (ENWR) ²</td>
</tr>
<tr>
<td>CEEN 6953</td>
<td>Graduate Seminar in Civil Engineering (ENWR) ²</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering (ENWR) ²</td>
</tr>
</tbody>
</table>

Additional courses within the specialization as approved by adviser and the CCEE director of graduate studies

Remaining courses chosen from the following or from the list above: 18

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<tbody>
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<tr>
<td>CEEN 5340</td>
<td>Urban Planning for Civil Engineers</td>
</tr>
<tr>
<td>CEEN 5350</td>
<td>Law for Engineers</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6460</td>
<td>Engineering Reliability</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering</td>
</tr>
<tr>
<td>BIOL 5102</td>
<td>Experimental Molecular Biology</td>
</tr>
<tr>
<td>CHEM 5433</td>
<td>Physical Chemistry 1</td>
</tr>
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<td>CHEM 5434</td>
<td>Physical Chemistry 2</td>
</tr>
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<td>CHEM 5630</td>
<td>Introduction to Polymer Science</td>
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<tr>
<td>CHEM 6201</td>
<td>Physical Methods of Analysis</td>
</tr>
<tr>
<td>CHEM 6202</td>
<td>Spectrochemical Methods of Analysis</td>
</tr>
<tr>
<td>CHEM 6203</td>
<td>Electroanalytical Methods</td>
</tr>
<tr>
<td>CHEM 6204</td>
<td>Analytical Separations</td>
</tr>
<tr>
<td>LAW 7730</td>
<td>Workshop: Environmental Practice</td>
</tr>
</tbody>
</table>

Additional courses as approved by adviser and the CCEE director of graduate studies

M.S. Oral Comprehensive Examination 0

Total Credit Hours 30

² Topics in CEEN 5931, CEEN 6932, CEEN 6953 and CEEN 6995 must pertain to the specialization of environmental and water resources engineering.

For the Structural Engineering and Structural Mechanics (SESM) specialization, Plan B students must complete:

Required specialization course work (12 credits minimum) chosen from the following: 12

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>CEEN 5145</td>
<td>Advanced Strength and Applied Stress Analysis</td>
</tr>
<tr>
<td>or MEEN 5230</td>
<td>Intermediate Mechanics of Materials</td>
</tr>
<tr>
<td>CEEN 5411</td>
<td>Matrix Structural Analysis</td>
</tr>
<tr>
<td>CEEN 5431</td>
<td>Advanced Structural Steel Design</td>
</tr>
<tr>
<td>CEEN 5441</td>
<td>Advanced Reinforced Concrete Design</td>
</tr>
<tr>
<td>CEEN 5450</td>
<td>Bridge Design</td>
</tr>
<tr>
<td>CEEN 5460</td>
<td>Foundation Engineering</td>
</tr>
<tr>
<td>CEEN 5850</td>
<td>FRP in Civil Engineering Infrastructure</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering (SESM) ³</td>
</tr>
<tr>
<td>CEEN 6110</td>
<td>Theory of Elasticity</td>
</tr>
<tr>
<td>CEEN 6120</td>
<td>Introduction to the Finite Element Method</td>
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<tr>
<td>CEEN 6121</td>
<td>Applied Finite Element Analysis and Modeling</td>
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<tr>
<td>CEEN 6410</td>
<td>Numerical Analysis with Structural Application</td>
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<td>CEEN 6420</td>
<td>Nonlinear Structural Analysis</td>
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<tr>
<td>CEEN 6425</td>
<td>Earthquake Engineering</td>
</tr>
<tr>
<td>CEEN 6435</td>
<td>Structural Dynamics</td>
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</table>
### 198 Civil Engineering (CIEN)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>CEEN 6470</td>
<td>Performance-Based Engineering</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering (SESM) ³</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering (SESM) ³</td>
</tr>
<tr>
<td>MEEN 6230</td>
<td>Advanced Mechanics of Materials</td>
</tr>
</tbody>
</table>

Additional courses within the specialization as approved by adviser and the CCEE director of graduate studies

Remaining courses chosen from the following or from the list above: 18

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<td>Engineering Decisions Under Uncertainty</td>
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<tr>
<td>CEEN 5340</td>
<td>Urban Planning for Civil Engineers</td>
</tr>
<tr>
<td>CEEN 5350</td>
<td>Law for Engineers</td>
</tr>
<tr>
<td>CEEN 5715</td>
<td>Sustainable Engineering</td>
</tr>
<tr>
<td>CEEN 5830</td>
<td>Construction Planning, Scheduling, and Control</td>
</tr>
<tr>
<td>CEEN 5840</td>
<td>Construction Cost Analysis and Estimating</td>
</tr>
<tr>
<td>CEEN 5845</td>
<td>Construction Equipment and Methods</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6460</td>
<td>Engineering Reliability</td>
</tr>
<tr>
<td>CEEN 6840</td>
<td>Infrastructure Information Modeling</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering</td>
</tr>
<tr>
<td>MEEN 5240</td>
<td>Polymers and Polymer Composites</td>
</tr>
<tr>
<td>MEEN 5245</td>
<td>Fatigue and Fracture Mechanics</td>
</tr>
<tr>
<td>MEEN 5260</td>
<td>Introduction to Continuum Mechanics</td>
</tr>
<tr>
<td>MEEN 5265</td>
<td>Intermediate Finite Element Methods</td>
</tr>
<tr>
<td>MEEN 5420</td>
<td>Failure Analysis</td>
</tr>
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<td>MEEN 5450</td>
<td>Mechanical Behavior of Materials</td>
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<tr>
<td>MEEN 5485</td>
<td>Welding Engineering</td>
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<tr>
<td>MEEN 5931</td>
<td>Topics in Mechanical Engineering</td>
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<tr>
<td>MEEN 6101</td>
<td>Advanced Engineering Analysis 1</td>
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<td>MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
</tr>
<tr>
<td>MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
</tr>
<tr>
<td>MEEN 6470</td>
<td>Statistical Methods in Engineering</td>
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<tr>
<td>MEEN 6931</td>
<td>Topics in Mechanical Engineering</td>
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<tr>
<td>MSSC 5700</td>
<td>Theory of Probability</td>
</tr>
</tbody>
</table>

Additional courses as approved by adviser and the CCEE director of graduate studies

M.S. Oral Comprehensive Examination 0

Total Credit Hours 30

³ Topics in CEEN 5931, CEEN 6932 and CEEN 6995 must pertain to the specialization of structural engineering and structural mechanics.

For the Transportation Engineering and Materials (TEMA) specialization, Plan B students must complete:

Required specialization course work (12 credits minimum) chosen from the following: 12

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>CEEN 5340</td>
<td>Urban Planning for Civil Engineers</td>
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<tr>
<td>CEEN 5615</td>
<td>Highway Planning and Design</td>
</tr>
<tr>
<td>CEEN 5630</td>
<td>Airport Planning and Design</td>
</tr>
<tr>
<td>CEEN 5640</td>
<td>Traffic Characteristics and Design</td>
</tr>
<tr>
<td>CEEN 5650</td>
<td>Pavement Design</td>
</tr>
<tr>
<td>CEEN 5660</td>
<td>Pavement Management</td>
</tr>
<tr>
<td>CEEN 5670</td>
<td>Advanced Transportation Materials</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering (TEMA) ⁴</td>
</tr>
<tr>
<td>CEEN 6610</td>
<td>Advanced Traffic Operations Analysis and Design</td>
</tr>
<tr>
<td>CEEN 6620</td>
<td>Urban Facility Design</td>
</tr>
<tr>
<td>CEEN 6635</td>
<td>Highway Interchange Design</td>
</tr>
<tr>
<td>CEEN 6650</td>
<td>Bituminous Materials</td>
</tr>
</tbody>
</table>
CEEN 6655  Transportation Soils
CEEN 6660  Advanced Pavement Design
CEEN 6932  Advanced Topics in Civil Engineering (TEMA) 4
CEEN 6995  Independent Study in Civil Engineering (TEMA) 4

Additional courses within the specialization as approved by adviser and the CCEE director of graduate studies

Remaining courses chosen from the following or from the list above: 18

CEEN 5230  Urban Hydrology and Stormwater Management
CEEN 5310  Geographical Information Systems in Engineering and Planning
CEEN 5320  Engineering Decisions Under Uncertainty
CEEN 5350  Law for Engineers
CEEN 5450  Bridge Design
CEEN 5460  Foundation Engineering
CEEN 5715  Sustainable Engineering
CEEN 5830  Construction Planning, Scheduling, and Control
CEEN 5840  Construction Cost Analysis and Estimating
CEEN 5845  Construction Equipment and Methods
CEEN 5850  FRP in Civil Engineering Infrastructure
CEEN 5931  Topics in Civil Engineering
CEEN 6460  Engineering Reliability
CEEN 6470  Performance-Based Engineering
CEEN 6840  Infrastructure Information Modeling
CEEN 6860  GIS Applications in Water Resources Engineering
CEEN 6932  Advanced Topics in Civil Engineering
CEEN 6995  Independent Study in Civil Engineering

Additional courses as approved by adviser and the CCEE director of graduate studies

M.S. Oral Comprehensive Examination 0

Total Credit Hours 30

4  Topics in CEEN 5931, CEEN 6932 and CEEN 6995 must pertain to the specialization of transportation engineering and materials.

Accelerated Degree Program (ADP)

The department offers a five-year combined B.S./M.S. program known as the Accelerated Degree Program (ADP). This program enables students to earn both a bachelor of science degree in either civil engineering or construction engineering and a master of science degree in civil engineering in just five years (or six with completion of a co-op). Students currently enrolled in an undergraduate degree program in the Department of Civil, Construction and Environmental Engineering at Marquette University (with a GPA of 3.500 or above) may apply for admission to the ADP during their junior year. Students currently enrolled in an undergraduate degree program in the Department of Civil, Construction and Environmental Engineering at Marquette University (with a GPA of 3.500 or above) may apply for admission to the ADP during their junior year. Students must submit an application to the Marquette University Graduate School, indicate their interest in the ADP, and meet all other admission criteria as stated in the Application Requirements section of the Graduate Bulletin.

In addition to completing their undergraduate degree requirements, students take master's level courses during their senior year. The remaining master's level course work is taken during the student's fifth year. A maximum of 6 credits of course work may be applied to both the undergraduate and graduate degree requirements but these credits must be courses that carry graduate credit (i.e., courses numbered 5000 or above). Students are strongly encouraged to pursue Plan A (thesis option), in which work on the thesis research should begin during the summer between the junior and senior years. Students continue to gain research experience during the summer between the senior and fifth years, continuing throughout the fifth year and culminating in preparation of a written thesis and defense. Accelerated degree programs following Plan B (course work option) may also be designed.

Civil Engineering Doctoral Requirements

Specializations: Construction Engineering (CNEN), Environmental and Water Resources Engineering (ENWR), Structural Engineering and Structural Mechanics (SESM), Transportation Engineering and Materials (TEMA)

A doctoral student in civil engineering must complete a program of study prepared in consultation with his or her doctoral adviser and outlined on an approved Doctoral Program Planning Form. This form must be submitted within the first year of the student's doctoral studies. A student in the civil engineering doctoral program must select a specialization.

The requirements of the doctoral program in civil engineering include the following:
• A minimum of 45 credit hours of graduate-level course work (5000 or above) beyond the baccalaureate degree.
• A minimum of 12 credit hours of course work taken while in the Marquette doctoral program must be at the 6000 level or above.
• 12 credit hours of dissertation work.
• A minimum of 12 credit hours must be taken from a list of approved courses within the specialization. (See the appropriate table below.)
• A maximum of nine (9) credit hours of Independent Study courses may be included in the course work total.

For cases in which students enter the program with a master’s degree from another institution in the same or closely-related field, students may request (on the Doctoral Program Planning Form) that a maximum of 21 credit hours of graduate-level course work from the prior master’s degree count toward the Ph.D. 45-credit course work credit requirement. Thus, for these students a minimum of 24 credit hours of course work exclusive of the dissertation must be taken at Marquette University while the student is in the doctoral program.

For cases in which students enter the program with a master’s degree from Marquette University in the same or closely-related field, students may request (on the Doctoral Program Planning Form) that a maximum of 30 credit hours of graduate-level course work from the prior master’s degree count toward the Ph.D. 45-credit course work credit requirement. Thus, for these students a minimum of 15 credit hours of course work exclusive of the dissertation must be taken at Marquette University while the student is in the doctoral program.

For any direct-entry Ph.D. student in civil engineering, i.e., one who enters the Ph.D. program without a prior master’s degree in the same or closely related field, that student shall be dual-classified by the Graduate School as both a Ph.D. student and an M.S. student. While in the course of their graduate studies at Marquette, if and when the student satisfies all M.S. degree requirements as listed in the Civil Engineering Master’s Requirements section of the Graduate Bulletin, then they may apply for M.S. graduation and be awarded the M.S. degree. Following the awarding of the M.S. degree, the student would no longer be dual-classified and would simply be classified as a Ph.D. student. For cases in which a direct-entry Ph.D. student intends to earn an M.S. while working toward the Ph.D., the student should clearly indicate on the Doctoral Program Planning Form which of the Ph.D. courses listed to meet the 45-credit doctoral course requirement are also being requested to satisfy the M.S. course work requirement.

• Doctoral Qualifying Examination (DQE): A student must pass a doctoral qualifying examination (DQE) administered by the student’s doctoral committee toward the end of completing the course work requirement. The DQE normally consists of both written and oral tests. Each faculty member on a doctoral candidate’s committee may submit questions for the written examination. The doctoral committee, as a whole, gives the oral examination.

• Dissertation Outline: Within two terms of passing the written and oral portions of the DQE, the student should submit a dissertation outline that is approved by the entire dissertation committee. This document serves as an agreement between the student and the committee regarding the expectations of the dissertation content, including the motivation, objectives, and scope of the proposed study. The outline should also document the originality of the dissertation research and place the proposed work within the context of related studies that appear in the literature.

• Dissertation: The student must write, successfully defend, and submit an approved dissertation. The dissertation must represent an original research contribution showing high attainment and clear ability to do independent research. The dissertation defense is a public defense and must be scheduled in advance by using the appropriate Graduate School form. (The submission deadline is specified on the form.) The approved dissertation must meet the format requirements of the Graduate School as indicated in the Dissertation Directives available at the Graduate School website. The dissertation is not considered to have satisfied the degree requirements until it has been formally accepted by the Graduate School.

• All graduate students must maintain a 3.000 cumulative GPA to graduate. Determination of the cumulative GPA is based on all courses taken during a student’s graduate career at Marquette University, including prerequisite and repeated courses, if any.

• Completion of all other university Graduate School requirements, including meeting the relevant graduation application deadline.

### Course Requirements

For the Construction Engineering (CNEN) specialization, students must complete:

Required specialization course work (12 credits minimum) chosen from the following: 12

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEEN 5320</td>
<td>Engineering Decisions Under Uncertainty</td>
</tr>
<tr>
<td>CEEN 5340</td>
<td>Urban Planning for Civil Engineers</td>
</tr>
<tr>
<td>CEEN 5350</td>
<td>Law for Engineers</td>
</tr>
<tr>
<td>CEEN 5660</td>
<td>Pavement Management</td>
</tr>
<tr>
<td>CEEN 5815</td>
<td>Mechanical and Electrical Systems for Buildings</td>
</tr>
<tr>
<td>CEEN 5830</td>
<td>Construction Planning, Scheduling, and Control</td>
</tr>
<tr>
<td>CEEN 5840</td>
<td>Construction Cost Analysis and Estimating</td>
</tr>
<tr>
<td>CEEN 5845</td>
<td>Construction Equipment and Methods</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering (CNEN) ¹</td>
</tr>
<tr>
<td>CEEN 6460</td>
<td>Engineering Reliability</td>
</tr>
<tr>
<td>CEEN 6840</td>
<td>Infrastructure Information Modeling</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering (CNEN) ¹</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering (CNEN) ¹</td>
</tr>
<tr>
<td>CEEN 8995</td>
<td>Independent Study in Civil Engineering (CNEN) ¹</td>
</tr>
</tbody>
</table>

Additional courses within the specialization as approved by adviser and the CCEE director of graduate studies
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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
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<tbody>
<tr>
<td>CEEN 5460</td>
<td>Foundation Engineering</td>
</tr>
<tr>
<td>CEEN 5715</td>
<td>Sustainable Engineering</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6470</td>
<td>Performance-Based Engineering</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 8995</td>
<td>Independent Study in Civil Engineering</td>
</tr>
<tr>
<td>BUAD 6000</td>
<td>Accounting and Finance for the Non-Financial Manager</td>
</tr>
<tr>
<td>BUAD 6005</td>
<td>Economic Foundations for Marketing Decisions</td>
</tr>
<tr>
<td>COSC 5610</td>
<td>Data Mining</td>
</tr>
<tr>
<td>COSC 6050</td>
<td>Elements of Software Development</td>
</tr>
<tr>
<td>COSC 6931</td>
<td>Topics in Computer Science</td>
</tr>
<tr>
<td>ECON 6200</td>
<td>Economics for Management Decision Making</td>
</tr>
<tr>
<td>EECE 5650</td>
<td>Introduction to Algorithms</td>
</tr>
<tr>
<td>EECE 5830</td>
<td>Introduction to Computer Graphics</td>
</tr>
<tr>
<td>MBA 6100</td>
<td>Business Analytics</td>
</tr>
<tr>
<td>MEEN 6101</td>
<td>Advanced Engineering Analysis 1</td>
</tr>
<tr>
<td>MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
</tr>
<tr>
<td>MEEN 6470</td>
<td>Statistical Methods in Engineering</td>
</tr>
<tr>
<td>MSSC 5700</td>
<td>Theory of Probability</td>
</tr>
<tr>
<td>MSSC 5720</td>
<td>Statistical Methods</td>
</tr>
<tr>
<td>MSSC 6020</td>
<td>Statistical Simulation</td>
</tr>
<tr>
<td>MSSC 6931</td>
<td>Topics in Mathematical or Statistical Sciences</td>
</tr>
<tr>
<td>CEEN 8999</td>
<td>Doctoral Dissertation</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>dissertation Public Defense and Submission of Approved Dissertation</td>
</tr>
</tbody>
</table>

Total Credit Hours: 57

1 Topics in CEEN 5931, CEEN 6932, CEEN 6995 and CEEN 8995 must pertain to the specialization of construction engineering.

For the Environmental and Water Resources Engineering (ENWR) specialization, students must complete:

Required specialization course work (12 credits minimum) chosen from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEEN 5230</td>
<td>Urban Hydrology and Stormwater Management</td>
</tr>
<tr>
<td>CEEN 5515</td>
<td>Environmental Chemistry</td>
</tr>
<tr>
<td>CEEN 5520</td>
<td>Industrial Wastewater Management</td>
</tr>
<tr>
<td>CEEN 5525</td>
<td>Treatment Plant Design and Operation</td>
</tr>
<tr>
<td>CEEN 5530</td>
<td>Hazardous and Industrial Waste Management</td>
</tr>
<tr>
<td>CEEN 5535</td>
<td>Environmental Engineering Microbiology</td>
</tr>
<tr>
<td>CEEN 5550</td>
<td>Water Resources Planning and Management</td>
</tr>
<tr>
<td>CEEN 5560</td>
<td>Environmental Fate and Transport</td>
</tr>
<tr>
<td>CEEN 5715</td>
<td>Sustainable Engineering</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering (ENWR)</td>
</tr>
<tr>
<td>CEEN 6340</td>
<td>Advanced Hydrology</td>
</tr>
<tr>
<td>CEEN 6350</td>
<td>Modeling in Water Resources Engineering</td>
</tr>
<tr>
<td>CEEN 6510</td>
<td>Biochemical Transformations in the Environment</td>
</tr>
<tr>
<td>CEEN 6520</td>
<td>Environmental Laboratory 1 - Analyses</td>
</tr>
<tr>
<td>CEEN 6521</td>
<td>Environmental Laboratory 2 - Processes</td>
</tr>
<tr>
<td>CEEN 6540</td>
<td>Physical and Chemical Processes of Environmental Engineering</td>
</tr>
<tr>
<td>CEEN 6560</td>
<td>Fate of Micropollutants</td>
</tr>
<tr>
<td>CEEN 6860</td>
<td>GIS Applications in Water Resources Engineering</td>
</tr>
</tbody>
</table>
### Civil Engineering (CIEN)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering (ENWR)⁴</td>
</tr>
<tr>
<td>CEEN 6953</td>
<td>Graduate Seminar in Civil Engineering (ENWR)⁴</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering (ENWR)⁴</td>
</tr>
<tr>
<td>CEEN 8995</td>
<td>Independent Study in Civil Engineering (ENWR)⁴</td>
</tr>
</tbody>
</table>

Additional courses within the specialization as approved by adviser and the CCEE director of graduate studies.

Remaining courses chosen from the following or from the list above. (This 33-credit total may also include a maximum of 21 credit hours from a prior master's program.)

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<tbody>
<tr>
<td>CEEN 5320</td>
<td>Engineering Decisions Under Uncertainty</td>
</tr>
<tr>
<td>CEEN 5340</td>
<td>Urban Planning for Civil Engineers</td>
</tr>
<tr>
<td>CEEN 5350</td>
<td>Law for Engineers</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6460</td>
<td>Engineering Reliability</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 8995</td>
<td>Independent Study in Civil Engineering</td>
</tr>
<tr>
<td>BIOL 5102</td>
<td>Experimental Molecular Biology</td>
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<tr>
<td>CHEM 5433</td>
<td>Physical Chemistry 1</td>
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<tr>
<td>CHEM 5434</td>
<td>Physical Chemistry 2</td>
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<tr>
<td>CHEM 5630</td>
<td>Introduction to Polymer Science</td>
</tr>
<tr>
<td>CHEM 6201</td>
<td>Physical Methods of Analysis</td>
</tr>
<tr>
<td>CHEM 6202</td>
<td>Spectrochemical Methods of Analysis</td>
</tr>
<tr>
<td>CHEM 6203</td>
<td>Electroanalytical Methods</td>
</tr>
<tr>
<td>CHEM 6204</td>
<td>Analytical Separations</td>
</tr>
<tr>
<td>LAW 7730</td>
<td>Workshop: Environmental Practice</td>
</tr>
</tbody>
</table>

Additional courses as approved by adviser and the CCEE director of graduate studies.

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CEEN 8999</td>
<td>Doctoral Dissertation</td>
</tr>
<tr>
<td>CEEN 8999</td>
<td>Ph.D. Dissertation Public Defense and Submission of Approved Dissertation</td>
</tr>
</tbody>
</table>

**Total Credit Hours**: 57

² Topics in CEEN 5931, CEEN 6932, CEEN 6953, CEEN 6995 and CEEN 8995 must pertain to the specialization of environmental and water resources engineering.

For the Structural Engineering and Structural Mechanics (SESM) specialization, students must complete:

Required specialization course work (12 credits minimum) chosen from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEEN 5145</td>
<td>Advanced Strength and Applied Stress Analysis</td>
</tr>
<tr>
<td>or MEEN 5230</td>
<td>Intermediate Mechanics of Materials</td>
</tr>
<tr>
<td>CEEN 5411</td>
<td>Matrix Structural Analysis</td>
</tr>
<tr>
<td>CEEN 5431</td>
<td>Advanced Structural Steel Design</td>
</tr>
<tr>
<td>CEEN 5441</td>
<td>Advanced Reinforced Concrete Design</td>
</tr>
<tr>
<td>CEEN 5450</td>
<td>Bridge Design</td>
</tr>
<tr>
<td>CEEN 5460</td>
<td>Foundation Engineering</td>
</tr>
<tr>
<td>CEEN 5850</td>
<td>FRP in Civil Engineering Infrastructure</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering (SESM)³</td>
</tr>
<tr>
<td>CEEN 6110</td>
<td>Theory of Elasticity</td>
</tr>
<tr>
<td>CEEN 6120</td>
<td>Introduction to the Finite Element Method</td>
</tr>
<tr>
<td>CEEN 6121</td>
<td>Applied Finite Element Analysis</td>
</tr>
<tr>
<td>CEEN 6410</td>
<td>Numerical Analysis with Structural Application</td>
</tr>
<tr>
<td>CEEN 6420</td>
<td>Nonlinear Structural Analysis</td>
</tr>
<tr>
<td>CEEN 6425</td>
<td>Earthquake Engineering</td>
</tr>
<tr>
<td>CEEN 6435</td>
<td>Structural Dynamics</td>
</tr>
<tr>
<td>CEEN 6470</td>
<td>Performance-Based Engineering</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering (SESM)³</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering (SESM)³</td>
</tr>
</tbody>
</table>
### CEEN 8995
Independent Study in Civil Engineering (SESM)

### MEEN 6230
Advanced Mechanics of Materials

*Additional courses within the specialization as approved by adviser and the CCEE director of graduate studies*

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<td>Urban Planning for Civil Engineers</td>
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<td>Law for Engineers</td>
</tr>
<tr>
<td>CEEN 5715</td>
<td>Sustainable Engineering</td>
</tr>
<tr>
<td>CEEN 5830</td>
<td>Construction Planning, Scheduling, and Control</td>
</tr>
<tr>
<td>CEEN 5840</td>
<td>Construction Cost Analysis and Estimating</td>
</tr>
<tr>
<td>CEEN 5845</td>
<td>Construction Equipment and Methods</td>
</tr>
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<td>CEEN 5931</td>
<td>Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6460</td>
<td>Engineering Reliability</td>
</tr>
<tr>
<td>CEEN 6840</td>
<td>Infrastructure Information Modeling</td>
</tr>
<tr>
<td>CEEN 6932</td>
<td>Advanced Topics in Civil Engineering</td>
</tr>
<tr>
<td>CEEN 6995</td>
<td>Independent Study in Civil Engineering</td>
</tr>
<tr>
<td>MEEN 5240</td>
<td>Polymers and Polymer Composites</td>
</tr>
<tr>
<td>MEEN 5245</td>
<td>Fatigue and Fracture Mechanics</td>
</tr>
<tr>
<td>MEEN 5260</td>
<td>Introduction to Continuum Mechanics</td>
</tr>
<tr>
<td>MEEN 5265</td>
<td>Intermediate Finite Element Methods</td>
</tr>
<tr>
<td>MEEN 5420</td>
<td>Failure Analysis</td>
</tr>
<tr>
<td>MEEN 5450</td>
<td>Mechanical Behavior of Materials</td>
</tr>
<tr>
<td>MEEN 5485</td>
<td>Welding Engineering</td>
</tr>
<tr>
<td>MEEN 5931</td>
<td>Topics in Mechanical Engineering</td>
</tr>
<tr>
<td>MEEN 6101</td>
<td>Advanced Engineering Analysis 1</td>
</tr>
<tr>
<td>MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
</tr>
<tr>
<td>MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
</tr>
<tr>
<td>MEEN 6470</td>
<td>Statistical Methods in Engineering</td>
</tr>
<tr>
<td>MEEN 6931</td>
<td>Topics in Mechanical Engineering</td>
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<tr>
<td>MSSC 5700</td>
<td>Theory of Probability</td>
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*Additional courses as approved by adviser and the CCEE director of graduate studies*

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<tbody>
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</tr>
<tr>
<td>Ph.D.</td>
<td>Dissertation Public Defense and Submission of Approved Dissertation</td>
</tr>
</tbody>
</table>

| Total Credit Hours | 57 |

3 Topics in CEEN 5931, CEEN 6932, CEEN 6995 and CEEN 8995 must pertain to the specialization of structural engineering and structural mechanics.

For the Transportation Engineering and Materials (TEMA) specialization, students must complete:

Required specialization course work (12 credits minimum) chosen from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CEEN 5340</td>
<td>Urban Planning for Civil Engineers</td>
</tr>
<tr>
<td>CEEN 5615</td>
<td>Highway Planning and Design</td>
</tr>
<tr>
<td>CEEN 5630</td>
<td>Airport Planning and Design</td>
</tr>
<tr>
<td>CEEN 5640</td>
<td>Traffic Characteristics and Design</td>
</tr>
<tr>
<td>CEEN 5650</td>
<td>Pavement Design</td>
</tr>
<tr>
<td>CEEN 5660</td>
<td>Pavement Management</td>
</tr>
<tr>
<td>CEEN 5670</td>
<td>Advanced Transportation Materials</td>
</tr>
<tr>
<td>CEEN 5931</td>
<td>Topics in Civil Engineering (TEMA)</td>
</tr>
<tr>
<td>CEEN 6610</td>
<td>Advanced Traffic Operations Analysis and Design</td>
</tr>
<tr>
<td>CEEN 6620</td>
<td>Urban Facility Design</td>
</tr>
<tr>
<td>CEEN 6635</td>
<td>Highway Interchange Design</td>
</tr>
</tbody>
</table>
Additional courses within the specialization as approved by adviser and the CCEE director of graduate studies

Remaining courses chosen from the following or from the list above. (This 33-credit total may also include a maximum of 21 credit hours from a prior master’s program.)

CEEN 5230 Urban Hydrology and Stormwater Management
CEEN 5310 Geographical Information Systems in Engineering and Planning
CEEN 5320 Engineering Decisions Under Uncertainty
CEEN 5350 Law for Engineers
CEEN 5450 Bridge Design
CEEN 5560 Foundation Engineering
CEEN 5715 Sustainable Engineering
CEEN 5830 Construction Planning, Scheduling, and Control
CEEN 5840 Construction Cost Analysis and Estimating
CEEN 5845 Construction Equipment and Methods
CEEN 5850 FRP in Civil Engineering Infrastructure
CEEN 5931 Topics in Civil Engineering
CEEN 6460 Engineering Reliability
CEEN 6470 Performance-Based Engineering
CEEN 6840 Infrastructure Information Modeling
CEEN 6860 GIS Applications in Water Resources Engineering
CEEN 6932 Advanced Topics in Civil Engineering
CEEN 6995 Independent Study in Civil Engineering
CEEN 8995 Independent Study in Civil Engineering

Additional courses as approved by adviser and the CCEE director of graduate studies

CEEN 8999 Doctoral Dissertation
Ph.D. Dissertation Public Defense and Submission of Approved Dissertation

Total Credit Hours 57

4 Topics in CEEN 5931, CEEN 6932, CEEN 6995 and CEEN 8995 must pertain to the specialization of transportation engineering and materials.

The Department of Civil, Construction and Environmental Engineering offers a certificate in environmental engineering. Certificate requirements can be found in the Graduate Certificates section (p. 239).

Courses

CEEN 5145. Advanced Strength and Applied Stress Analysis. 3 cr. hrs.

CEEN 5230. Urban Hydrology and Stormwater Management. 3 cr. hrs.
Distribution and properties of waters on the earth. Concept of the hydrologic cycle, and basic principles of meteorology, precipitation, streamflow, evapotranspiration, and groundwater flow. Erosion and urban stormwater pollution. Design of urban flood protection and stormwater pollution abatement systems.

CEEN 5310. Geographical Information Systems in Engineering and Planning. 3 cr. hrs.
Fundamentals of GIS, databases, data management, map projections, representations of spatial attributes, GIS analysis and GIS software systems such as ARC Info, ARC View, Grass. GIS use and expanded capabilities are taught. Case studies including environmental, transportation and economic applications are discussed.

Application of probability and statistics to modeling, analysis and design of civil engineering systems. Topics include: probability theory, decision theory, utility theory and simulation.
CEEN 5340. Urban Planning for Civil Engineers. 3 cr. hrs.
Concepts and principles underlying urban planning and development. Land use, transportation, utility, community facility planning problems, procedures, and techniques. The master plan and implementation devices such as zoning, subdivision control, official mapping, capital budgeting, and urban renewal.

CEEN 5350. Law for Engineers. 3 cr. hrs.
Basic legal principles and awareness of typical legal questions that arise when engineers and law interact. Topics include: American judicial system, law of contracts, forms of association, construction contracts, professional liabilities of engineers and torts.

CEEN 5411. Matrix Structural Analysis. 3 cr. hrs.

CEEN 5431. Advanced Structural Steel Design. 3 cr. hrs.
Continuation of CEEN 3430. Design of plate girders, composite beam and slab systems, composite columns and composite beam-columns, simple connections, moment connections, hollow structural shape (HSS) connections, bracing systems and single and multi-story steel framed building systems. Emphasis on AISC Specifications.

CEEN 5441. Advanced Reinforced Concrete Design. 3 cr. hrs.
Continuation of CEEN 3440. Presenting advanced concrete design applications to reinforced concrete statically indeterminate systems, two-way slabs and columns. Introduction to the philosophy and concepts of prestressed concrete design. Basic principles and procedures for the design and analysis of prestressed members including calculation of pre-stress loss, flexural analysis and design, shear, bond and anchorage requirements, member deflections and cable layouts. Emphasis on ACI code requirements.

CEEN 5450. Bridge Design. 3 cr. hrs.
Introduction to bridge engineering and construction including: an abbreviated history of bridge construction; bridge types; bridge nomenclature; lessons from failures; design philosophies; and the construction process. Analysis of single- and multi-span bridge superstructures using classical techniques and commercial software. Design of single-span reinforced concrete slab bridges; reinforced concrete bridge decks; and single-span slab-bridges in prestressed concrete.

CEEN 5460. Foundation Engineering. 3 cr. hrs.
Design of earth retention systems, earthen dams, shallow and deep foundation members subjected to vertical and eccentric loadings. The effects of solid origin and deposition are analyzed in relation to bearing and capacity and settlement of structures. Prereq: CEEN 3160.

CEEN 5505. Air Quality Engineering. 3 cr. hrs.
Applies engineering principles to identify, quantify and mitigate sources of air pollution. Takes a systems approach to quantify sources of air pollution, model fate and transport in the environment, identify public health and welfare aspects, develop monitoring and measuring programs, interpret regulatory framework, and design engineering solutions. Atmospheric physics and chemistry are applied in air dispersion modeling to predict air quality impacts. Air pollution control technologies are evaluated to design practical and economic solutions.

CEEN 5515. Environmental Chemistry. 3 cr. hrs.
Chemical stoichiometry, equilibrium, and kinetics relating to natural and engineered environmental systems. Basic concepts from organic and inorganic chemistry including oxidation-reduction reactions, acid-base chemistry, the carbonate system, alkalinity and acidity. Equilibrium and kinetic theories of chemical partitioning among gas, liquid and solid phases governing chemical fate and transport in the environment. Coordination chemistry describing metal-ligand interactions, precipitation and bioavailability of materials.

CEEN 5520. Industrial Wastewater Management. 3 cr. hrs.
Review of federal legislation and state regulations with regard to industrial wastewater management practices. Consideration of industrial process modifications and wastewater treatment options with respect to their effect on industrial user fees. Pretreatment standards and discharge permit requirements. Case studies of specific industrial applications.

CEEN 5525. Treatment Plant Design and Operation. 3 cr. hrs.
Review of water and wastewater characteristics, drinking water, receiving water and effluent standards. Basic design methodology and operational features of common physical, chemical and biological processes for the treatment of waters and wastewaters. Introduction to the processing and disposal of sludges and other treatment plant residuals.

CEEN 5530. Hazardous and Industrial Waste Management. 3 cr. hrs.
CEEN 5535. Environmental Engineering Microbiology. 3 cr. hrs.
Includes microbiological and biochemical properties of microorganisms important in environmental engineering practice. General fundamentals of environmental microbiology and their application to drinking water treatment and distribution, water pollution control and natural systems.

CEEN 5550. Water Resources Planning and Management. 3 cr. hrs.
Planning and management of water resources. Institutional frameworks for water resources engineering. Comprehensive integration of the engineering economic, social and legal aspects of water resources planning and management. Case studies of water use and environmental resources are studied.

CEEN 5560. Environmental Fate and Transport. 3 cr. hrs.
Introduction to the movement and fate of chemicals in surface and subsurface waters, including physical transport and chemical and biological sources and sinks. Development and solution of continuity equations for coupled water and chemical transport relevant to environmental remediation, storm water control and wastewater treatment.

CEEN 5615. Highway Planning and Design. 3 cr. hrs.
Emphasis on highway planning, alternate highway alignments and alternate evaluation. Geometric design of highways including horizontal and vertical alignment, cross-section design. Projects on detailed design of reverse curves (plan and profile views); intersection design; cross-section and earthwork quantities. Legal aspects of engineering. Use of American Association of State Highway and Transportation Officials design guidelines.

CEEN 5630. Airport Planning and Design. 3 cr. hrs.
Introduction to airport planning and design parameters, aircraft characteristics, payload versus range, runway length requirements, air traffic control, wind analysis, airside capacity and delay, airside separation criteria, terminal analysis and delay, airport access flow and capacity, ramp charts. Economic analysis of facility improvements.

CEEN 5640. Traffic Characteristics and Design. 3 cr. hrs.
Components of the traffic system: vehicle and road user characteristics, geometric design and traffic controls. Intersection types, cross-section design elements and typical dimensions. Basic variables of traffic flow, observed traffic flow values. Freeway operations. Signalized intersections: flow, capacity, level of service. Projects addressing: intersection existing conditions (traffic, geometry, signalization); approach delay; safety performance; capacity; suggestions for improvements. Use of the Highway Capacity Manual and the Highway Capacity Software. Emphasis on technical report-writing and presentation.

CEEN 5650. Pavement Design. 3 cr. hrs.
Study of the behavior and properties of highway pavements with emphasis on hot mix asphalt and jointed Portland cement concrete pavement. Pavement thickness designs are developed using current design methods and incorporating subgrade soil properties, traffic forecasts and pavement performance expectations. Use of spreadsheets and computer programs are required. Prereq: CEEN 3160 and CEEN 3610; or equiv.

CEEN 5660. Pavement Management. 3 cr. hrs.
Study of the performance of pavement systems based on design, traffic and maintenance activities. Methods for evaluating in-service pavements including distress surveys and nondestructive testing are examined. Maintenance strategies are developed and life-cycle cost analysis of these strategies are studied. Prereq; CEEN 3610 or equiv.

CEEN 5670. Advanced Transportation Materials. 3 cr. hrs.
Advanced study of materials used for constructing transportation facilities, with particular emphasis on subgrade soils, bound and unbound aggregates, hot mix asphalt and Portland cement concrete. Laboratory test are conducted and analytical models used for characterizing transportation materials are examined.

CEEN 5715. Sustainable Engineering. 3 cr. hrs.
Provides a framework for the theory and practice of sustainable engineering. Introduces the importance and role of technological, social and sustainable systems in the modern world, which is increasingly characterized by integrated human/natural/built complex adaptive systems at local, regional and global scales. Develops critical problem solving approaches, including life-cycle assessment, global awareness, consciousness of patterns in technological evolution, and strategies for addressing environmental, economic and social equity issues in engineering design.

CEEN 5815. Mechanical and Electrical Systems for Buildings. 3 cr. hrs.
Provides basic knowledge of electrical, plumbing and HVAC systems used in residential, commercial and industrial buildings. Studies the advantages and disadvantages of various systems, and how their design and installation integrates into the management of the building process. Particular attention is given to soliciting and managing mechanical and electrical subcontractors.

CEEN 5830. Construction Planning, Scheduling, and Control. 3 cr. hrs.
A study of principles and techniques used to plan, schedule and control costs on building construction projects. Network and linear scheduling models, resource allocation and time-cost analysis. Develops an appreciation of the resources required in a project and their limitations and introduces the techniques for analyzing and improving their use. Develops an understanding of the correlation between project planning and control and cost estimating and scheduling.

Study of various cost estimating methods and their applications. Topics include: labor, material, equipment and indirect costs; quantity takeoff; analysis of historical cost data; forecasting and computerized estimating methods.

CEEN 5845. Construction Equipment and Methods. 3 cr. hrs.
Construction equipment and productivity analysis. Design of equipment fleet operations. Design of temporary structures used during construction such as earth retaining structures and concrete formwork systems. Construction equipment safety and safety standards related to earthwork and concrete forming operations.
CEEN 5850. FRP in Civil Engineering Infrastructure. 3 cr. hrs.
Introduces Fiber Reinforced Polymer (FRP) material properties, FRP reinforced concrete, FRP prestressed concrete, FRP repaired and retrofitted structures and pure FRP structures.

CEEN 5931. Topics in Civil Engineering. 1-3 cr. hrs.
Course content announced each term. Prereq: Cons. of instr.

CEEN 6110. Theory of Elasticity. 3 cr. hrs.
Mathematical preliminaries (indicial notation, vectors, Cartesian tensors, coordinate transformations, eigenvalue problems, divergence theorem); kinematic relations (strain-displacement and compatibility); stress tensor and traction vector; differential and virtual work expressions of equilibrium; constitutive relations; stored energy functions; formulation of elastostatics boundary value problems; uniqueness theorems; theorem of minimum potential energy; Saint-Venant's principle; Saint-Venant beam theory; plane stress and plane strain.

CEEN 6120. Introduction to the Finite Element Method. 3 cr. hrs.
Theoretical development of the finite element method (FEM) of analysis, with particular emphasis on problems of solid mechanics; development of element stiffness matrices for axial, beam, plane stress, plate, shell, and solid elements; synthesis of global stiffness matrix, solution of the finite element equations; introduction to numerical implementation of FEM and general purpose FEM software.

CEEN 6121. Applied Finite Element Analysis and Modeling. 3 cr. hrs.
Review of linear elastic finite element analysis (FEA) theory in solid/structural mechanics; review of commercial FEA code use (ANSYS®) in linear elastic applications; introduction to advanced theories, including theories of vibration, material nonlinearities, geometric nonlinearities, structural instabilities, and/or time-dependent deformations (creep); use of ANSYS® to simulate complex structural behavior; model development, verification, and improvement. Prereq: CEEN 6120 or equiv.

CEEN 6210. River Engineering. 3 cr. hrs.
Offers a solid background in the basic principles of open-channel hydraulics, gradually-varied flow, rapidly-varied flow, hydrologic and hydraulic flood routing, and river restoration/naturalization. Hand calculations of numerous open-channel flow problems, and application of the HEC-RAS program for backwater analysis and for flood routing in combination with HEC-1. Includes concepts for stream restoration/naturalization.

CEEN 6240. Water Quality Modeling and Management. 3 cr. hrs.

CEEN 6340. Advanced Hydrology. 3 cr. hrs.
Measurement of hydrologic phenomena including precipitation and streamflow. Applications of statistics to hydrology, floods and droughts. Hydrologic design of water resources development and management projects. State-of-the-art computer models for watershed management and urban hydrology.

CEEN 6350. Modeling in Water Resources Engineering. 3 cr. hrs.
Introduction to hydraulic and hydrologic models with applications to water resources engineering. Continuity equations. Analytical and numerical methods for linear, nonlinear and coupled systems. Model applications include: calibration and validation, parameter estimation and optimization methods. Model systems include: surface and subsurface waters, storm water and combined sewer collection systems and water distribution systems.

CEEN 6410. Numerical Analysis with Structural Application. 3 cr. hrs.
Interpolation polynomials; numerical integration and differentiation; Taylor series, Fourier, cubic spline, and least-squares polynomial approximations; numerical solution of initial-value problems by Prediction-Correction and Runge-Kutta methods; numerical solution of boundary-value problems by finite difference method; numerical solution of integral equations; approximate solution of ordinary differential equations by weighted residuals and Galerkin methods; approximate solution of variational problems by Rayleigh-Ritz method.

CEEN 6420. Nonlinear Structural Analysis. 3 cr. hrs.
Application of the principle of virtual displacements in the formulation of element stiffness equations that include geometric and material nonlinearity. Determination of critical (buckling) loads of structural systems using eigenvalue analysis. Formulation and application of algorithms for nonlinear structural analysis. Application of commercial software in geometrically nonlinear analysis, materially nonlinear analysis, and critical load (buckling) analysis. Prereq: CEEN 5411.

CEEN 6425. Earthquake Engineering. 3 cr. hrs.
Introduction to the mechanics of ground motion (earthquake) and its effects on building and bridge structures. Application of structural dynamics principles in relation to structural analysis for earthquake-generated forces. Response to simulation of single degree of freedom and multi-degree of freedom linear structural systems to earthquake-induced ground accelerations using Newmark response history analysis (RHA), modal response history analysis (mRHA) and response spectrum analysis (RSA). Discussion of philosophies upon which building-code IBC, NEHRP) mandated earthquake analysis and design procedures are based. Prereq: CEEN 3430, CEEN 3440, CEEN 5411, CEEN 6435.

CEEN 6435. Structural Dynamics. 3 cr. hrs.
Formulation of single-degree-of freedom (SDF) equation of motion; generalized SDF systems; free-vibration response; harmonic excitation; periodic loading and Fourier series; impulsive loads; response (shock) spectra; general response by Duhamel and Fourier integrals; non-linear dynamic analysis; Rayleigh's method; formulation of multiple-degree-of freedom (MDOF) equations of motion; structural property matrices and load vectors; eigenvalue problem for natural frequencies and mode shapes; orthogonality of mode shapes; mode superposition.
CEEN 6460. Engineering Reliability. 3 cr. hrs.
Introduces concepts and applications of engineering reliability. Presents how to formulate a reliability question to solve engineering problems of interest; compute first- and second-order estimates of failure probabilities of engineered systems; compute sensitivities of failure probabilities to assumed parameter values; measure the relative importance of the random variables associated with a system; identify the relative advantages and disadvantages of various analytical reliability methods as well as Monte Carlo simulation; update reliability estimates based on new observational data; and compute system reliability for series and parallel systems. Prereq: Requires basic knowledge of probability and statistics, descriptions of random variables, probability distributions, functions of random variables, estimation of model parameters, model selection and verification, covered by MATH 6010 or equivalent; ECEE 6020, CEEN 4320/5320, MATH 4700/5700, 4710/5710, 4720/5720; linear algebra, systems of equations, matrix operations, transformations; calculus and differential equations, differentiation, integration, ordinary and partial differential equations. Knowledge of basic Matlab programming helpful.

CEEN 6470. Performance-Based Engineering. 3 cr. hrs.
Provides an opportunity to utilize and master the framework of performance-based engineering to aid decision making via useful applications. Presents how to estimate the hazard at the site and system of interest, in order to assess system response, predict damage extent, and evaluate system performance in terms of expected loss. Topics include: analyses of hazard, response, damage and loss; synthesis of recent advancement in research and practice with case studies; emphasis on the impact of earthquakes on buildings, with extension to other hazards and systems. Prereq: Requires basic knowledge of probability and statistics, equivalent to MATH 4700/5700, 4710/5710, 4720/5720, or CEEN 4320. Knowledge of basic Matlab programming helpful.

CEEN 6510. Biochemical Transformations in the Environment. 3 cr. hrs.

CEEN 6520. Environmental Laboratory 1 - Analyses. 3 cr. hrs.
Physical, chemical and biological analyses for the characterization of waters, wastewaters, solid wastes, sludges and leachates. Use of modern instrumentation in laboratory analysis. Applicability of analytical results to the environmental field. Prereq: CEEN 3510 and CEEN 5515.

CEEN 6521. Environmental Laboratory 2 - Processes. 3 cr. hrs.
Theoretical principles and laboratory experimentation governing the processes of settling, coagulation, adsorption, flotation, disinfection, oxygen transfer, biological treatment and sludge conditioning, thickening and dewatering. Prereq: CEEN 5525 and CEEN 6520.

CEEN 6530. Hazardous Waste Remediation Technologies. 3 cr. hrs.

CEEN 6540. Physical and Chemical Processes of Environmental Engineering. 3 cr. hrs.
Theory and design of unit operations and processes utilized for the treatment of water and wastewater, including coagulation, flocculation, sedimentation, filtration, adsorption, ion exchange and aeration. Prereq: CEEN 5515 and CEEN 5525.

CEEN 6550. Fate of Micropollutants. 3 cr. hrs.
Presents how to predict what a compound will do in an environment, based on the structure of the molecule. Discusses publications in peer-reviewed literature. Develops skills including critical thinking, public speaking via oral presentations, and technical writing.

CEEN 6610. Advanced Traffic Operations Analysis and Design. 3 cr. hrs.

CEEN 6620. Urban Facility Design. 3 cr. hrs.
Design controls overview. Access management location, spacing and design. Intersection design elements and traffic control devices. Local street design; Collector street design; Arterial street design. Roadside design-roadside obstacles. Bus and rail transit design for on- and off-street operation.

CEEN 6635. Highway Interchange Design. 3 cr. hrs.
Planning, analysis, design and operational analysis of highway interchanges. Determination and adaptability of interchange types for freeway-to-freeway and service interchanges.

CEEN 6650. Bituminous Materials. 3 cr. hrs.
Study of the behavior and properties of asphalt binders and hot mix asphalt pavement materials. The chemistry and rheological properties of asphalt binders with and without additives as well as the physical properties of aggregates are examined. Hot mix asphalt mix design methods are analyzed and laboratory testing of asphalt binders is conducted.
CEEN 6655. Transportation Soils. 3 cr. hrs.
Advanced study of surficial soils, soils variability, subgrade evaluation procedures, repeated loading behavior or soils and subgrade stability as used for constructing transportation facilities. Prereq: CEEN 3320 and CEEN 3160 or equiv.

CEEN 6660. Advanced Pavement Design. 3 cr. hrs.
Advanced study of behavior and properties of highway and airfield pavements with emphasis on computer analysis of the stress-strain behavior under loading. Distress-specific performance expectations are developed for design pavement structures. Prereq: CEEN 3160 and CEEN 3610; or equiv.

CEEN 6680. Infrastructure Information Modeling. 3 cr. hrs.
Infrastructure project lifecycle information generated during various stages of a project lifecycle. Computer modeling technologies used for managing project information. Relational data models. Relational representation of building information. Designing relational databases for efficient storage and management of infrastructure information. Object-created data models. Object-created analysis and design. Object-oriented representation of building information. Involves a project that accesses and integrates information from several sources such as a BIM model and other project resource databases for problem solving. Homework problems and course project are implemented in C# programming language.

CEEN 6865. Biotechnology - Microbial Communities. 3 cr. hrs.
Development of molecular methods with a focus on genomic approaches to characterize microbial community structure. Bioprocesses for waste management including anaerobic digestion, nitrification, denitrification, enhanced biological phosphorus removal, anammox and others. Concepts linking microbial community structure to process function, including functional resistance and resilience.

CEEN 6866. GIS Applications in Water Resources Engineering. 3 cr. hrs.
Use of Geographical Information Systems (GIS) concepts and methods to solve water resources problems. GIS fundamentals such as databases, map projections, spatial analysis, and raster analysis. Applications for water resources engineering including terrain analysis, watershed characterization and hydrologic analysis and modeling. Approaches to GIS integration with modeling software and online tools.

CEEN 6932. Advanced Topics in Civil Engineering. 1-3 cr. hrs.
Course content announced each term. Topics may include: structural optimization, design of structures for random loads, transportation systems analysis and design, water and wastewater systems analysis and design, and soil-structure interaction.

CEEN 6953. Graduate Seminar in Civil Engineering. 0-3 cr. hrs.
Review of current literature. Group discussion of recent work and current research by students and staff. 0 credit will be SNC/UNC grade assessment; 1-3 credits will be graded.

CEEN 6995. Independent Study in Civil Engineering. 1-3 cr. hrs.
Prereq: Cons. of instr. and cons. of dept. ch.

CEEN 6997. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 6998. Master’s Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 6999. Master’s Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

CEEN 8953. Doctoral Seminar in Civil Engineering. 0-3 cr. hrs.
0 credit will be SNC/UNC grade assessment; 1-3 credits will be graded.

CEEN 8995. Independent Study in Civil Engineering. 1-3 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

CEEN 8997. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 8998. Master’s Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

CEEN 9984. Master’s Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 9985. Master’s Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 9986. Master’s Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
CEEN 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

CEEN 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Electrical and Computer Engineering (EECE)

Chairperson: Majeed Hayat, Ph.D.
Electrical and Computer Engineering Graduate Programs website (https://www.marquette.edu/grad/programs-electrical-computer-engineering.php)

Degrees Offered
Master of Science; Doctor of Philosophy; Certificates

Mission Statement
The Department of Electrical and Computer Engineering embraces the missions of Marquette University and its College of Engineering. The mission of the Department of Electrical and Computer Engineering is to offer its students high quality, up-to-date, nationally-recognized programs in electrical and computer engineering that prepare them for successful careers. This success is marked by a commitment to lifelong learning and a deep concern for the impact of their work on others, research that advances the frontiers of technical and scientific knowledge and service to professional and civic communities.

Program Descriptions
The master of science and doctor of philosophy degree programs are designed to provide graduate students with both broad fundamental knowledge and up-to-date information on current and emerging technologies. Students may enroll on either a full-time or part-time basis (with the exception of the one-year residency requirement for doctoral students). Doctoral students and research-oriented master’s students engage in research activities under the close supervision of their advisers, gradually learning to become independent researchers. Their projects often are supported by government and industry grants. Courses and research activities make significant use of the department’s extensive laboratory and computer facilities. Graduates find employment in industry, research facilities, government and academia.

The Department also offers two graduate certificates in electrical engineering and computer engineering, designed for practicing professionals. Students typically enroll on a part-time basis. The certificate in renewable energy technology and integration (RETI) is intended to develop graduates with the capabilities required to solve complex renewable-energy problems in a variety of application domains. The RETI certificate will offer students the opportunity to achieve a greater technical understanding of the elements of renewable-energy development including sustainable-energy sources, microgrids, power conversion, and energy policy. Graduates of the RETI program are likely to find positions in a wide range of organizations including governmental agencies, electric power generating industries, consulting engineering companies, manufacturing employers, and other services. The certificate in machine learning for engineering applications (MLRN) will offer students the opportunity to achieve a greater technical understanding of the elements of machine learning, which includes algorithms, intelligent systems, neural networks, pattern recognition, and deep learning. It will allow engineers to (1) apply the fundamentals of machine learning to solve engineering problems in their organization and (2) supplement on-the-job training often employed in industry to develop this skillset. Graduates of the MLRN program may find positions in a wide range of organizations including industry and governmental agencies, data-science and data-analytics businesses, AI industries, consulting engineering companies, and other services.

Prerequisites for Admission
Graduates of accredited colleges or universities with bachelor's degree in electrical engineering, computer engineering or equivalent are eligible for admission. Only those applicants whose undergraduate records show promise of success in graduate study are admitted. To qualify for admission, applicants must have, as a minimum, approximately a B average in their total post-secondary school education.

A master of science degree or equivalent in an appropriate field of study is required for admission to the doctoral program. Applicants with bachelor's degrees must first be admitted to and successfully complete the master of science degree program and may then continue into the doctoral program.

Application Requirements
Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. Three letters of recommendation.
5. GRE test scores (General Test only).
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.
General Information

All admitted students are required to obtain and read the department’s Graduate Student Handbook (http://www.marquette.edu/engineering/electrical_computer/documents/gradhandbook2010.pdf), which contains complete details about the electrical and computer engineering programs and additional departmental degrees. This handbook is available through the Electrical and Computer Engineering Office, (414) 288-6820 and on the department’s graduate programs website (http://www.marquette.edu/engineering/electrical_computer/grad.shtml/).

Electrical and Computer Engineering Master's Requirements

The EECE department offers two options for earning a master's degree: a thesis option (Plan A) and a non-thesis/course work option (Plan B). By the end of the first term of full-time studies, all master's students are required to meet with their academic adviser and together complete a Master's Program Planning Form. This planning form will identify the chosen option (Plan A or B) as well as the proposed set of courses for their program of study. The program of study must be approved by the adviser and the EECE director of graduate studies.

Students choose one or more from the list of the EECE Department focus areas: Signal Processing, Communications and Controls (Signal Processing, Controls, or Communications); Power and Energy Systems; Electronic Devices and Microsystems; and Computer Engineering (Computer Vision and Image Processing, Embedded Systems and Internet of Things (IoT), or Machine Learning and Algorithms).

Thesis Option (Plan A)

For Plan A, students complete 24 credit hours of course work and 6 credit hours of EECE 6999 Master's Thesis for a total of 30 credit hours. All full-time students are required to participate in EECE 6952 Department Colloquium (0 credits) each semester. Course selections are determined in consultation with the adviser and depend on the focus area chosen.

- At least 18 of the 24 credits hours of course work must be taken in EECE.
- At least 12 credit hours (exclusive of thesis) must be taken strictly at the graduate level (6000 or 8000-level).
- Students must successfully complete and defend a research thesis under the guidance of their faculty advisers and thesis committee members.

Non-Thesis/Course Work Option (Plan B)

For Plan B, students complete a total of 30 credit hours of course work. All full-time students are required to participate in EECE 6952 Department Colloquium (0 credits) each semester. Course selections are determined in consultation with the adviser and depend on the focus area chosen.

- At least 21 credit hours must be in EECE.
- At least 18 credits of the total program course work and at least 12 credits of the EECE course work must be taken strictly at the graduate level (6000 or 8000-level).
- Students must successfully pass the master of science comprehensive written examination, given in fall and spring term, prior to graduation. The exam covers material from the selected focus area courses.

Signal Processing, Communications and Controls

Core Courses (9 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EECE 6010</td>
<td>Advanced Engineering Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>EECE 6020</td>
<td>Probability and Random Processes in Engineering</td>
<td>3</td>
</tr>
</tbody>
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Choose 1 of 3 area-specific courses: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>EECE 5510</td>
<td>Digital Signal Processing</td>
</tr>
<tr>
<td>EECE 5560</td>
<td>Introduction to Communication Systems</td>
</tr>
<tr>
<td>EECE 5310</td>
<td>Control Systems</td>
</tr>
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</table>

Elective Core Course Options 9

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
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<tbody>
<tr>
<td>EECE 5320</td>
<td>Digital Control Systems</td>
</tr>
<tr>
<td>EECE 5390</td>
<td>Developments in Control</td>
</tr>
<tr>
<td>EECE 5550</td>
<td>Developments in Signal Processing</td>
</tr>
<tr>
<td>EECE 5565</td>
<td>Optical Fiber Communications</td>
</tr>
<tr>
<td>EECE 5570</td>
<td>Wireless Communications</td>
</tr>
<tr>
<td>EECE 6310</td>
<td>Modern Control Theory</td>
</tr>
<tr>
<td>EECE 6320</td>
<td>Optimal Control</td>
</tr>
<tr>
<td>EECE 6330</td>
<td>Nonlinear and Adaptive Control</td>
</tr>
<tr>
<td>EECE 6340</td>
<td>Stochastic Systems Estimation and Control</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>EECE 6510</td>
<td>Optimal and Adaptive Digital Signal Processing</td>
</tr>
<tr>
<td>EECE 6520</td>
<td>Digital Processing of Speech Signals</td>
</tr>
<tr>
<td>EECE 6530</td>
<td>Chaos and Nonlinear Signal Processing</td>
</tr>
<tr>
<td>EECE 6540</td>
<td>Advanced Digital Image Processing</td>
</tr>
<tr>
<td>EECE 6560</td>
<td>Information and Coding Theory</td>
</tr>
<tr>
<td>EECE 6931</td>
<td>Topics in Electrical and Computer Engineering (Digital Communications)</td>
</tr>
<tr>
<td>EECE 6931</td>
<td>Topics in Electrical and Computer Engineering (Detection and Estimation)</td>
</tr>
<tr>
<td>EECE 6931</td>
<td>Topics in Electrical and Computer Engineering (Machine Learning for Image Processing)</td>
</tr>
</tbody>
</table>

**Elective Courses**

Selected graduate-level courses in EECE, biomedical engineering, computer science, mathematics as approved by adviser.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>EECE 6952</td>
<td>Department Colloquium</td>
</tr>
</tbody>
</table>

Plan A or Plan B requirements, as listed above.

Total Credit Hours: 30

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**Power and Energy Systems**

**Core Courses (9 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>EECE 5210</td>
<td>Design and Analysis of Electric Motor-Drive Systems</td>
</tr>
<tr>
<td>EECE 5220</td>
<td>Power Electronics for Renewable Energy Systems</td>
</tr>
</tbody>
</table>

Choose 1 of 2 area-specific courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>EECE 5240</td>
<td>Protection and Monitoring of Electric Energy Systems</td>
</tr>
<tr>
<td>EECE 5250</td>
<td>Transients in Electric Energy Systems and Devices</td>
</tr>
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</table>

**Elective Core Course Options (9 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>EECE 5230</td>
<td>Renewable and Legacy Electric Energy Systems Analysis</td>
</tr>
<tr>
<td>EECE 5290</td>
<td>Developments in Energy and Power</td>
</tr>
<tr>
<td>EECE 6210</td>
<td>Advanced Electric Machines and Drives</td>
</tr>
<tr>
<td>EECE 6220</td>
<td>Advanced Concepts in the Design and Modeling of Electric Machines and Drives</td>
</tr>
<tr>
<td>EECE 6230</td>
<td>Finite Element Analysis</td>
</tr>
<tr>
<td>EECE 6932</td>
<td>Advanced Topics in Electrical and Computer Engineering (Advanced Electrical Machine Design)</td>
</tr>
<tr>
<td>EECE 6932</td>
<td>Advanced Topics in Electrical and Computer Engineering (Advanced Power Electronics)</td>
</tr>
<tr>
<td>EECE 6932</td>
<td>Advanced Topics in Electrical and Computer Engineering (Vector Control)</td>
</tr>
</tbody>
</table>

**Elective Courses (6 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EECE 5320</td>
<td>Digital Control Systems</td>
</tr>
<tr>
<td>EECE 6010</td>
<td>Advanced Engineering Mathematics</td>
</tr>
<tr>
<td>EECE 6020</td>
<td>Probability and Random Processes in Engineering</td>
</tr>
<tr>
<td>EECE 6310</td>
<td>Modern Control Theory</td>
</tr>
<tr>
<td>EECE 6320</td>
<td>Optimal Control</td>
</tr>
<tr>
<td>EECE 6330</td>
<td>Nonlinear and Adaptive Control</td>
</tr>
</tbody>
</table>

Selected graduate-level courses in EECE, biomedical engineering, computer science, mathematics as approved by adviser.

<table>
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<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>EECE 6952</td>
<td>Department Colloquium</td>
</tr>
</tbody>
</table>

Plan A or Plan B requirements, as listed above.

Total Credit Hours: 30

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**Electronic Devices and Microsystems**

**Core Courses (Choose 9 total credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EECE 5110</td>
<td>Microwave Engineering</td>
</tr>
<tr>
<td>or EECE 6110</td>
<td>Advanced Electromagnetic Fields</td>
</tr>
<tr>
<td>or EECE 6120</td>
<td>Electromagnetic Theory</td>
</tr>
<tr>
<td>EECE 5430</td>
<td>Physical Principles of Solid State Devices</td>
</tr>
<tr>
<td>EECE 6010</td>
<td>Advanced Engineering Mathematics</td>
</tr>
<tr>
<td>EECE 6932</td>
<td>Advanced Topics in Electrical and Computer Engineering (Introduction to MEMS)</td>
</tr>
</tbody>
</table>

**Elective Core Course Options (9 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>EECE 5130</td>
<td>Antenna Theory and Design</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>EECE 5460</td>
<td>Sensor Devices: Theory, Design, and Applications</td>
</tr>
<tr>
<td>EECE 6130</td>
<td>Numerical Techniques in Electromagnetics</td>
</tr>
<tr>
<td>EECE 6430</td>
<td>Microelectromechanical Systems and Sensors</td>
</tr>
<tr>
<td>EECE 6931</td>
<td>Topics in Electrical and Computer Engineering (Introduction to Device Fabrication)</td>
</tr>
<tr>
<td>EECE 6931</td>
<td>Topics in Electrical and Computer Engineering (MEMS and Nanotechnology)</td>
</tr>
</tbody>
</table>

Elective Courses 6

Selected graduate-level courses in EECE, thermodynamics, quantum mechanics, materials, finite element methods, mechanical engineering, biomedical engineering, mathematics as approved by adviser.

EECE 6952 Department Colloquium (required each semester for all full-time students) 0

Plan A or Plan B requirements, as listed above. 6

Total Credit Hours 30

Computer Engineering

Core Courses (Choose 9 total credits) 9

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EECE 5650</td>
<td>Introduction to Algorithms</td>
</tr>
<tr>
<td>EECE 6810</td>
<td>Algorithm Analysis and Applications</td>
</tr>
<tr>
<td>EECE 6822</td>
<td>Machine Learning</td>
</tr>
</tbody>
</table>

One 3-credit selected mathematics course

Elective Core Course Options 9

Computer Vision and Image Processing:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EECE 5510</td>
<td>Digital Signal Processing</td>
</tr>
<tr>
<td>EECE 5850</td>
<td>Introduction to Intelligent Systems</td>
</tr>
<tr>
<td>EECE 5860</td>
<td>Introduction to Neural Networks and Fuzzy Systems</td>
</tr>
<tr>
<td>EECE 6540</td>
<td>Advanced Digital Image Processing</td>
</tr>
<tr>
<td>EECE 6840</td>
<td>Neural Networks and Neural Computing</td>
</tr>
<tr>
<td>EECE 6931</td>
<td>Topics in Electrical and Computer Engineering (Machine Learning and Medical Image Analysis)</td>
</tr>
<tr>
<td>EECE 6932</td>
<td>Advanced Topics in Electrical and Computer Engineering (Advanced Signal Processing)</td>
</tr>
</tbody>
</table>

One 3-credit selected mathematics course

Embedded Systems and Internet of Things (IoT): 9

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>EECE 5490</td>
<td>Developments in Devices</td>
</tr>
<tr>
<td>EECE 5510</td>
<td>Digital Signal Processing</td>
</tr>
<tr>
<td>EECE 5710</td>
<td>Computer Hardware</td>
</tr>
<tr>
<td>EECE 5730</td>
<td>Computer Architecture</td>
</tr>
<tr>
<td>EECE 5740</td>
<td>Advanced VHDL and FPGA Design</td>
</tr>
<tr>
<td>EECE 5850</td>
<td>Introduction to Intelligent Systems</td>
</tr>
<tr>
<td>EECE 6932</td>
<td>Advanced Topics in Electrical and Computer Engineering (Advanced Signal Processing)</td>
</tr>
</tbody>
</table>

One 3-credit selected mathematics course

Machine Learning and Algorithms:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EECE 5690</td>
<td>Developments in Computer Software</td>
</tr>
<tr>
<td>EECE 5850</td>
<td>Introduction to Intelligent Systems</td>
</tr>
<tr>
<td>EECE 5860</td>
<td>Introduction to Neural Networks and Fuzzy Systems</td>
</tr>
<tr>
<td>EECE 5870</td>
<td>Evolutionary Computation</td>
</tr>
<tr>
<td>EECE 6830</td>
<td>Pattern Recognition</td>
</tr>
<tr>
<td>EECE 6840</td>
<td>Neural Networks and Neural Computing</td>
</tr>
<tr>
<td>EECE 6931</td>
<td>Topics in Electrical and Computer Engineering (Machine Learning and Medical Image Analysis)</td>
</tr>
</tbody>
</table>

One 3-credit selected mathematics course

Elective Courses 6

Selected graduate-level courses in EECE, biomedical engineering, computer science, mathematics as approved by adviser.

EECE 6952 Department Colloquium (required each semester for all full-time students) 0

Plan A or Plan B requirements, as listed above. 6

Total Credit Hours 30
Accelerated Bachelor’s–Master’s Degree Program

The EECE Department offers an accelerated degree program where eligible students may obtain both a bachelor's degree and a master of science degree in electrical and computer engineering in five years.

- Students with a GPA of 3.500 or better in their mathematics, science and engineering courses are eligible to apply to this program in their junior year.
- This program is available to undergraduate students in electrical and computer engineering or in physics.
- Students wishing to participate in the five-year program must apply and be admitted to the program before their senior year.

Electrical and Computer Engineering Doctoral Requirements

Students entering the EECE doctoral program with a master's degree must take 24 post-master's credit hours of course work, plus an additional 12 dissertation credits in EECE 8999 Doctoral Dissertation, for a total of 36 credit hours. At least 18 of the 24 credit hours of course work must be taken in EECE. A master's degree is considered to be the equivalent of 24 credit hours of course work; the doctoral degree's course work requirement is the equivalent of 48 credits beyond the bachelor's degree, exclusive of dissertation credits.

Students entering the EECE doctoral program with a bachelor's degree must take 48 post-baccalaureate credit hours of course work, plus an additional 12 dissertation credits in EECE 8999 Doctoral Dissertation, for a total of 60 credit hours. Students entering the program with a bachelor's degree must first complete the requirements for the master of science degree.

Students choose one or more from the list of the EECE Department focus areas: Signal Processing, Communications and Controls (Signal Processing, Controls, or Communications); Power and Energy Systems; Electronic Devices and Microsystems; and Computer Engineering (Computer Vision and Image Processing, Embedded Systems and Internet of Things (IoT), or Machine Learning and Algorithms).

By the end of the first year of full-time studies, all doctoral students are required to meet with their academic adviser and together complete a Doctoral Program Planning Form. Completion of the Doctoral Program Planning Form must form a cohesive overall plan of study, including course requirements as determined by the selected focus area.

Doctoral students are also required to complete the doctoral written qualifying examination (WQE) by the end of the third semester of study. The WQE is administered twice per year. Following successful completion of the WQE, students become doctoral candidates and move forward to pursue their dissertation research.

The doctoral dissertation process requires the declaration of a faculty dissertation committee and a presentation of an oral proposal to the committee. Students write a dissertation of original, independent research, successfully defend the dissertation, and submit an approved dissertation. The dissertation defense is a public defense and must be scheduled in advance.

Post-master’s Program Requirements

Course work as approved by adviser. Courses chosen depend on focus area.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EECE 6952</td>
<td>Department Colloquium (required each semester for all full-time students)</td>
<td>0</td>
</tr>
<tr>
<td>EECE 8999</td>
<td>Doctoral Dissertation (taken over several terms)</td>
<td>12</td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td></td>
<td>36</td>
</tr>
</tbody>
</table>

Post-baccalaureate Program Requirements

Course work as approved by adviser. Courses chosen depend on focus area.

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EECE 6952</td>
<td>Department Colloquium (required each semester for all full-time students)</td>
<td>0</td>
</tr>
<tr>
<td>EECE 8999</td>
<td>Doctoral Dissertation (taken over several terms)</td>
<td>12</td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td></td>
<td>60</td>
</tr>
</tbody>
</table>

The Department of Electrical and Computer Engineering offers a certificate in machine learning for engineering applications and a certificate in renewable energy technology and integration. Certificate requirements can be found in the Graduate Certificates section (p. 239).

Courses

EECE 5015. Advanced Electrical Engineering Laboratory. 3 cr. hrs.

Project-based laboratory experience in the design, assembly and testing of advanced electronic and electrical systems. Course content announced prior to each term. Students may enroll in the course more than once as the content of the course changes. Possible topics for the advanced laboratory experience include, but are not limited to: advanced electromagnetic system design, optical and high frequency electronics, nonlinear control systems, motor control circuits and systems, power electronics, communications circuits, integrated microelectronic circuit design and fabrication (VLSI), advanced analog system design, advanced digital system design, microprocessor system-level design. Instruction and use of the appropriate test and measurement tools for design, assembly and testing of systems. Two hrs. lec., 2 hrs. lab. Prereq: Cons. of instr.
EECE 5090. Developments in Electronics. 1-3 cr. hrs.
Course content announced prior to each term. Students may enroll in the course more than once as subject matter changes. May be taught in traditional lecture format or as a seminar which focuses on readings from current literature. Possible topics include laser electronics, optoelectronics and photonics, RF circuit design, SOC design. Prereq: Cons. of instr. or grad. stdg.

EECE 5110. Microwave Engineering. 3 cr. hrs.
Studies the fundamentals of microwave engineering. After a review of transmission line theory and the Smith chart, the scattering parameters are developed and used to characterize and design a variety of devices including power dividers/directional couplers, filters, amplifiers, oscillators and mixers. Also introduces and develops receiver architectures and system noise. Prereq: ELEN 3110 or equivalent.

EECE 5130. Antenna Theory and Design. 3 cr. hrs.
Design and use of antennas of varying types, including wire, broadbands, horn, and reflector antennas in transmitting and receiving applications. The application and design of antenna arrays, and an introduction to diffraction theory.

EECE 5150. Applied Finite Elements in Electromagnetics. 3 cr. hrs.
Introduction to finite element (FE) analysis as applied to linear and static electromagnetic field problems. Review of basic field formulations using Maxwell’s electromagnetic field equations, solution of boundary value problems using the finite difference methods, FE formulations, assembly of elemental and global matrices, pre-processing, post-processing. Application of the FE method using one-dimensional and two-dimensional elements, magnetostatic and electrostatic analysis, and the use of commercially available software packages.

EECE 5190. Developments in Electromagnetics. 1-3 cr. hrs.
Course content announced prior to each term. Students may enroll in the course more than once as subject matter changes. May be taught in traditional lecture format or as a seminar which focuses on readings from current literature. Possible topics include wireless and microwave components and systems, electromagnetic compatibility, radio wave propagation. Prereq: Cons. of instr. or grad. stdg.

EECE 5210. Design and Analysis of Electric Motor-Drive Systems. 3 cr. hrs.
Principles of design of AC and DC electric machines, in particular design of electric motors in power electronically controlled adjustable speed drives, torque and power to volume analysis under constant volts per hertz torque-speed control. Covers design of AC induction, synchronous, universal and DC conventional as well as brushless DC motors, and low horsepower motors in adjustable speed drives. Covers effects of space and time harmonics on motor design and performance are covered including harmonic abatement for control of torque pulsation. Use of modern modeling techniques throughout.


EECE 5230. Renewable and Legacy Electric Energy Systems Analysis. 3 cr. hrs.
Elements of renewable and legacy electric power systems; fundamental concepts and techniques for design and analysis; per unit system; load flow; economic dispatch; smart grids and load management; steady state and transient power system stability.

EECE 5240. Protection and Monitoring of Electric Energy Systems. 3 cr. hrs.
Principles of design of relay and sensor systems for detection of faulty operating conditions in electric generators, transformers, power transmission lines, motors and other loads in power systems. Symmetrical components, balanced and unbalanced faults including single and multiple unbalances. Design and hierarchical coordination of protection systems for interconnected generation, transmission and distribution facilities in power systems, which includes integrated generator-transformer-busbar-transmission line-load protection and analysis of operation under fault conditions.

EECE 5250. Transients in Electric Energy Systems and Devices. 3 cr. hrs.
Covers microsecond fast transients in power systems and devices resulting from lightning strokes, switching surges in power systems and devices, as well as impulse surges resulting from pulse width modulation in modern adjustable speed drives, using distributed parameter models and analysis of transmission lines and windings of transformers, generators and motors. Also covers successive reflections, transition points, wavefront flattening techniques and surge arrestor design applications for voltage buildup reduction and control are studied. Includes polyphase multi-velocity multi-conductor system transients.

EECE 5290. Developments in Energy and Power. 1-3 cr. hrs.
Course content is announced prior to each term. Students may enroll in the course more than once as subject matter changes. May be taught in traditional lecture format or as a seminar which focuses on readings from current literature. Topics may include: electronics for machine and drive systems, electrical transients, faults and diagnostics and protection in power devices and systems, renewable energy systems, smart grids and advanced topics in the electric energy engineering area.

EECE 5310. Control Systems. 3 cr. hrs.
Review of continuous-time linear systems. Time-domain system analysis. Time-domain design of lead/lag and PID controllers. Root-Locus technique. Frequency-domain system analysis including Nyquist, Bode, and Nichols analysis and relative stability. Frequency-domain design/lag and PID controllers.

EECE 5320. Digital Control Systems. 3 cr. hrs.
Review of sampling processes, discrete time linear systems analysis and z-transform. Discrete time and sampled data state-variable analysis. Stability analysis, time domain and frequency-domain analysis and design. Analysis, design and computer implementation of digital algorithms and control systems.
EECE 5390. Developments in Control. 1-3 cr. hrs.
Course content announced prior to each term. Students may enroll in the course more than once as subject matter changes. May be taught in traditional lecture format or as a seminar which focuses on readings from current literature. Possible topics include optimal, adaptive and robust control methods, digital control and nonlinear systems.

EECE 5410. Integrated Microelectronic Circuits. 3 cr. hrs.
Basic processing technology of integrated circuits, passive components and their parasitic effects, MOS transistors, bipolar transistors and diodes, design of silicon integrated circuits. Emphasizes the design of circuits to meet given requirements.

Fundamental physical principles of solid state devices are presented. The operation of modern semiconductor devices is explained from first principles and these principles are used to extend the students' knowledge of devices used in electronic circuits.

Sensor classification and transduction principles. Fundamental principles and theory of operation of various types of sensors, based on various technologies which include: optical, electrical, acoustical, thermal, magnetic, mechanical and chemical. Analysis of sensor signals. Study of sensor characteristics which include hysteresis, non-linearity, saturation, repeatability, sensitivity, selectivity and resolution. Design and practical implementations of various sensors for scientific, industrial and consumer applications.

EECE 5490. Developments in Devices. 1-3 cr. hrs.
Course content announced prior to each term. Students may enroll in the course more than once as subject matter changes. May be taught in traditional lecture format or as a seminar which focuses on readings from current literature. Possible topics include: optoelectronic devices, nano-scale devices, solid-state devices, integrated electronic devices, power devices, electro-mechanical devices, quantum devices.

EECE 5510. Digital Signal Processing. 3 cr. hrs.
Introduction to the theory and practice of discrete-time signals and systems. Concepts covered include Fourier Transforms, Z-transforms, linear time invariant system analysis in the time and frequency domains, sampling theory and Discrete Fourier Transforms. Application of these concepts includes digital filter design techniques and the use of Fast Fourier Transforms for efficient frequency domain analysis. Labs and design projects related to specific signal processing applications are used to illustrate the material, including topics such as audio and image processing. Design Elective.

EECE 5520. Digital Image Processing. 3 cr. hrs.
Theory and practice of image digitization, processing, coding and analysis. Representations of images, image models. Techniques of image enhancement and restoration. Image compaction and coding. Segmentation and image understanding. Students have the opportunity to experiment with several image processing techniques using the MATLAB Image Processing Toolbox.

Course content is announced prior to each term. Students may enroll in the course more than once because subject matter changes. Depending upon the subject matter and the instructor, the class may be taught in traditional lecture format or as a seminar which focuses on readings from the current literature. Possible topics include filter design, DSP hardware, Nonlinear signal processing and multi-dimensional signal processing.

EECE 5560. Introduction to Communication Systems. 3 cr. hrs.
Survey of digital and analog communication systems including signal representation, modulation techniques, transmit and receive network design considerations.

EECE 5565. Optical Fiber Communications. 3 cr. hrs.
Fundamental principles and theories of optical fiber systems are introduced and developed. Review of electromagnetic principles of wave-guides. Step-Index and Graded-Index, single and multimode fibers. Signal analysis in optical fibers: mode interaction, attenuation, dispersion and pulse spreading. Operating characteristics of optical sources and photo-receivers with impact on system performance. Coupling to a fiber and distribution system. Optical fiber communication system design. Design Elective.

EECE 5570. Wireless Communications. 3 cr. hrs.
Fundamentals, analysis and design of cell systems, including trunking theory and grade of service. Large scale and small scale path loss analysis and modeling. Overview of modulation techniques, including amplitude and frequency modulating, and digital modulation techniques.

EECE 5590. Developments in Communications. 1-3 cr. hrs.
Course content announced prior to each term. Students may enroll in the course more than once as subject matter changes. May be taught in traditional lecture format or as a seminar which focuses on readings from current literature. Possible topics include digital modulation and detection, coding theory, information theory.

EECE 5610. Object-Oriented Software Engineering. 3 cr. hrs.
Presents advanced software engineering concepts in the context of object-oriented analysis and design. Topics include: concept of object-orientation, UML modeling techniques, use of CASE tools, use-case requirement analysis, modeling with classes, object-oriented design, design patterns, software quality, testing and correctness, software reuse and aspect-oriented software engineering. Prereq: COEN 2610 or equiv.

EECE 5620. Modern Programming Practices. 3 cr. hrs.
Explores advanced topics in computer programming. Topics may include: design patterns, advanced graphical components, software component models such as Java Beans, the Java Security model, Java and databases, servlets, Java Server Pages, and Enterprise Java Beans.
EECE 5630. Software Testing. 3 cr. hrs.
Examines the relationship of software testing to quality, emphasizing testing techniques and the role of testing in the validation of system requirements. Topics include: module and unit testing, integration, walkthroughs and inspections, verification and validation, preventing and detecting errors, selecting and implementing project metrics, and defining test plans and strategies traced from system requirements.

EECE 5650. Introduction to Algorithms. 3 cr. hrs.
Introduction to the algorithms analysis. Topics to be covered include: the concepts of time and space complexity, advanced data structures, general issues in problem solving methodologies, greedy algorithms, dynamic programming, graph algorithms, AI-related algorithms, and an introduction to NP-completeness theory. Prereq: COSC 2010 or equiv.

EECE 5690. Developments in Computer Software. 3 cr. hrs.
Course content announced prior to each term. Students may enroll in the course more than once as subject matter changes. Prereq: Cons. of instr.

EECE 5710. Computer Hardware. 3 cr. hrs.
Overview of computer system design. Cost and performance specification. Design of arithmetic and logic units. Fundamentals of central processor architecture and a comparative study of computer instruction set architectures. Detailed study of microprocessors, including instruction execution timing and other timing considerations. Discussions of memory and I/O devices, including the interfaces to the CPU and I/O transfer techniques. Study of common bus standards.

EECE 5730. Computer Architecture. 3 cr. hrs.

EECE 5740. Advanced VHDL and FPGA Design. 3 cr. hrs.
Presents the background, abstractions, and techniques for advanced digital circuits design and optimization. Emphasizes specification and synthesis using VHDL and prototyping using FPGAs of complex systems. Such systems represent examples from various application domains, including processors, image and video processing, filtering and other DSPs, and power electronics.

EECE 5790. Developments in Computer Hardware. 3 cr. hrs.
Course content announced prior to each term. Students may enroll in the course more than once as subject matter changes. Prereq: Cons. of instr.

EECE 5810. Database Applications. 3 cr. hrs.
Presents the design and application of databases. Topics include: models for databases, database query languages, database design methods, methods for storing and retrieving information from a database, database optimizations, transaction processing, and a brief examination of some advanced concepts, including object databases, distributed databases and database security.

EECE 5820. Operating Systems and Networking. 3 cr. hrs.
Introduces the fundamental concepts of operating systems together with the basics of networking and communications including: memory management, scheduling, concurrent processing, device management, file systems, networking, security, and system performance. Examples are drawn from legacy and modern operating systems.

EECE 5830. Introduction to Computer Graphics. 3 cr. hrs.
Introduction to computer graphics algorithm design and implementation; includes considerable actual computer graphics experience. Topics include: point-plotting and line-drawing techniques, two-dimensional curve fitting, two- and three-dimensional graphics, clipping, windowing, hidden line removal, modeling, input-output devices, and other topics as future trends dictate. Prereq: Proficiency in at least one high-level computing language.

EECE 5840. Computer Security. 3 cr. hrs.
Introduction to the important issues in computer security, including cryptography, program security, operating system security, database security, and network security. Also discusses the legal, ethical and privacy issues that arise in computer security. Programming projects enable the student to practice implementing many of the security measures discussed in class.

EECE 5850. Introduction to Intelligent Systems. 3 cr. hrs.
Provides a broad exposure to intelligent systems, including related fields such as artificial and computational intelligence. Topics include: intelligent agents, search, game playing, propositional logic and first-order predicate calculus, uncertainty, learning, communication and perception, and philosophical foundations of intelligent systems. Prereq: COSC 2010, MATH 1450, MATH 2105 or equiv.

EECE 5860. Introduction to Neural Networks and Fuzzy Systems. 3 cr. hrs.
Concepts of artificial neural network architectures and training algorithms, supervised and unsupervised learning, linear and non-linear neural networks, feedback neural networks, applications in scientific and engineering areas, fundamentals of fuzzy sets and fuzzy logic, fuzzy rules and inference systems, fuzzy pattern classification and clustering analysis and fuzzy control systems. Prereq: COSC 2010 and MATH 1451 or equiv.

EECE 5870. Evolutionary Computation. 3 cr. hrs.
Covers a set of search methods based on the Darwinian principle of survival of the fittest. The methods include genetic algorithms, evolutionary strategies and evolutionary and genetic programming, which have been successfully applied to many different problem domains including optimization, learning, control, and scheduling. Provides students with the background and knowledge to implement various evolutionary computation algorithms, discusses trade-offs between different evolutionary algorithms and other search methods, and discusses issues related to the application and performance evaluation of evolutionary algorithms. Prereq: COSC 2010, MATH 1450, MATH 2105 or equiv.
EECE 5890. Developments in Computing. 1-3 cr. hrs.
Course content announced prior to each term. Students may enroll in the course more than once as subject matter changes. May be taught in traditional lecture format or as a seminar which focuses on readings from current literature. Possible topics include: advanced hardware (MPP, EPIC, VLIW), advanced software (enterprise systems, embedded software, real-time software) and advanced intelligent systems.

EECE 6010. Advanced Engineering Mathematics. 3 cr. hrs.
Linear algebra and matrix theory, ordinary differential equations and complex variables emphasizing both theoretical and numerical aspects as well as engineering applications. Prereq: MATH 2451 or equiv.

EECE 6020. Probability and Random Processes in Engineering. 3 cr. hrs.
Probability, random variables, statistics, and random processes, emphasizing both theoretical and numerical aspects as well as engineering applications. Prereq: MATH 2451 or equiv.

EECE 6090. Advanced Engineering 1. 3 cr. hrs.
Mathematics, image processing, signal processing, image reconstruction, and imaging systems in medical imaging applications. Offered fall term at the General Electric Medical Systems facility. This course extends beyond the Marquette term; students receive an IC grade initially. The IC will be changed to an A-F grade at the end of the course. Prereq: Cons. of instr.; GE employee.

EECE 6092. Advanced Engineering 2. 3 cr. hrs.
Problem solving methodology, software engineering tools and environment (typical topics: UNIX, C, data structures, object oriented paradigm, programming strategies), and hardware engineering tools (typical topics: analog and digital CAD, PALs, VME, applications). EECE 6092 and EECE 6810 may not both be used to meet degree requirements. Offered spring term at the General Electric Medical Systems facility. This course extends beyond the Marquette term; students receive an IC grade initially. The IC will be changed to an A-F grade at the end of the course. Prereq: Cons. of instr.; GE employee.

EECE 6094. Advanced Engineering 3. 3 cr. hrs.
Covers advanced concepts in medical imaging and systems. Offered spring term at the General Electric Medical Systems facility. This course extends beyond the Marquette term; students receive an IC grade initially. The IC will be changed to an A-F grade at the end of the course. Prereq: Cons. of instr.; GE employee.

EECE 6110. Advanced Electromagnetic Fields. 3 cr. hrs.
Solutions of Laplace and Poisson equations arising from electro and magneto static field configurations. Separation of variables, numerical relaxation, and conformal mapping techniques. Prereq: EECE 3110 or equiv.

EECE 6120. Electromagnetic Theory. 3 cr. hrs.
Review of Maxwell's equations and waves in dielectric and lossy media; image theory, induction theorem and Green's function. Plane, cylindrical and spherical wave functions; radiation and antennas; rectangular, cylindrical waveguides and cavities; spherical cavities. Perturbation and variation techniques and moment techniques. Prereq: EECE 3120 or equiv.

EECE 6130. Numerical Techniques in Electromagnetics. 3 cr. hrs.
Introduction and overview of numerical methods in electromagnetics, focusing on high frequency methods. Topics covered include: a review of analytic methods and the generalized multipole technique, finite difference methods, variational techniques, and the solution to integral equations via the method of moments. Prereq: ELEN 3120 and MATH 2451 or equiv.

EECE 6210. Advanced Electric Machines and Drives. 3 cr. hrs.
Machine characterization. Development and application of transformation theory to synchronous and induction machines to predict machine performance under steady state and abnormal conditions. Modeling of permanent magnet and switched reluctance machines, as well as other advanced machine systems. Dynamic performance prediction of electric machines and associated power electronics using equivalent network models and computer simulations. Prereq: ELEN 3210 and MATH 2451 or equiv.

Presents advanced concepts and methodologies in designing and modeling modern electric machines controlled and operated from electronically switched electric drives. Involves methods of analysis and computation of the adverse synergistic effects which occur between the space harmonics generated in electric machinery due to magnetic circuit topologies, time harmonics generated by electronic switching in the controllers/drives, and the impact of this synergism on losses, efficiency, torque quality and other performance issues. Includes full and rigorous analysis and inclusion of such space harmonics, and time harmonics. Studies, in detail, methods of mitigation or elimination of these effects using advance modeling concepts and tools. Prereq: ELEN 3210 or equiv.

EECE 6230. Finite Element Analysis. 3 cr. hrs.
Basic field formulations using Maxwell's electromagnetic field equations. General definitions and formulations of finite element discretization. Consideration of applications and method implementation. Application of the finite element method to engineering and design problems. Post processing, practical aspects and other considerations. Application of method involves the use of commercially available software packages as well as computer code developed during this course. Prereq: MATH 2451 or equiv.; and proficiency in computer programming.

EECE 6310. Modern Control Theory. 3 cr. hrs.
Review of linear algebra and matrices. State variable analysis of continuous-time and discrete-time systems. Controllability and observability of linear systems. Stability of linear and nonlinear systems. Design of feedback control systems. Introduction to optimal control theory. Prereq: EECE 6010 which may be taken concurrently; or MEEN 6101 which may be taken concurrently.
EECE 6320. Optimal Control. 3 cr. hrs.
Provides an in-depth understanding of the problems in optimal control theory and their applications. Presents calculus of variations, linear quadratic regulator design, dynamic programming, time-optimal, and output feedback regulating and tracking optimal control techniques for continuous-time systems. Presents discrete-time techniques for calculus of variations, linear quadratic tracking, output feedback optimal control, and time-optimal control. Also presents optimal observers. Prereq: EECE 6010 and EECE 6310 or equiv.

EECE 6330. Nonlinear and Adaptive Control. 3 cr. hrs.

EECE 6340. Stochastic Systems Estimation and Control. 3 cr. hrs.
Modeling probabilistic dynamical behavior with stochastic systems. Analysis of behavior of linear continuous and discrete time systems via simulation and analytical methods. Filter construction for state and parameter estimation using noisy and incomplete measurements for linear and nonlinear systems and measurements models. Design of optimal controllers based on quadratic criteria for linear stochastic systems.

EECE 6420. Infrared and Photonics Sensors: Theory and Applications. 3 cr. hrs.

EECE 6430. Microelectromechanical Systems and Sensors. 3 cr. hrs.
Overview of microelectromechanical-MEMS-transducers and sensors. Basic engineering sciences and fundamental principles relevant to mechanical sensors and micromachined mechanical transducers. Mathematical models and design of microelectromechanical systems. Microlithography techniques, materials and processes. Mechanical transduction techniques, pressure sensors, force and torque sensors, inertial sensors, flow sensors, micromachined resonant sensors, micromachined chemical sensors. Prereq: ELEN 3110 or equiv.

EECE 6450. Surface-Acoustic-Wave Devices. 3 cr. hrs.
Theory of surface and other acoustic modes; design, analysis, and performance of interdigital devices; multistrip couplers; SAW resonators; dispersive delay lines; system applications; current research areas. Prereq: ELEN 3020 and ELEN 3110 or equiv.

EECE 6510. Optimal and Adaptive Digital Signal Processing. 3 cr. hrs.
Introduction to optimal and adaptive signal processing theory and applications. Topics include: statistically optimal gradient descent methods, such as least-mean-squares and minimal error methods, least squares and recursive least squares, Wiener filters, linear prediction, Kalman filters and performance and convergence analysis techniques. Prereq: EECE 5510 and EECE 6020 or equiv.

EECE 6520. Digital Processing of Speech Signals. 3 cr. hrs.
Introduction to the fundamentals of speech processing, including speech production and perception models and frequency-domain analysis methods such as, linear predictive coding and cepstral analysis. Applications studied include: speech coding, enhancement, recognition and synthesis. Prereq: EECE 5510 or equiv.

EECE 6530. Chaos and Nonlinear Signal Processing. 3 cr. hrs.
Introduces the theory and practice for analyzing chaotic and nonlinear signals. Examines methods for finding hidden structures in signals and time series, using techniques such as phase space reconstruction. Discusses topics previously mentioned along with machine learning, time series analysis, adaptive signal processing, wavelets and nonlinear dynamics. Prereq: EECE 5510 or equiv.

EECE 6540. Advanced Digital Image Processing. 3 cr. hrs.

EECE 6560. Information and Coding Theory. 3 cr. hrs.
Introduction to information measure, mutual information, self-information, entropy, encoding of information, discrete and continuous channels, channel capacity, error detection, error correcting codes, group codes, cyclic codes, BCH codes, convolution codes, and advanced codes.

EECE 6710. Computer Architecture. 3 cr. hrs.

EECE 6810. Algorithm Analysis and Applications. 3 cr. hrs.
Introduction to the analysis of algorithms. Topics include: asymptotic complexity notation, recursion analysis, basic and advanced data structures, sorting methodologies, dynamic programming, and graph algorithms, including heuristic search techniques such as best-first and A-star algorithms. Advanced topics include NP-completeness theory and linear programming. Prereq: EECE 2710 and MATH 1451 or equiv.

EECE 6820. Artificial Intelligence. 3 cr. hrs.
Provides a comprehensive survey of artificial intelligence. Topics include: search, logic, planning, uncertainty, learning, communication and perception, robotics and philosophical foundations of artificial intelligence. Prereq: COSC 2010, MATH 1450, MATH 2105 or equiv.
EECE 6822. Machine Learning. 3 cr. hrs.
An introduction to a range of adaptive computer algorithms that learn models from data. Explores the theoretical foundations of machine learning, including computational learning theory and PAC learnability. Examples of machine learning algorithms studied include: decision trees, artificial neural networks, Bayesian learners, evolutionary algorithms and ensemble techniques. Prereq: EECE 6820 or equiv.

EECE 6830. Pattern Recognition. 3 cr. hrs.
Theory and application of statistical pattern recognition, hypothesis testing and parameter estimation. Topics include: probability distribution models, Bayesian decision theory and hypothesis testing, classical and modern approaches to parameter estimation, parametric and non-parametric classifiers. Also, covered are feature selection and transformation techniques such as Principal Components Analysis, a wide range of classifier models and supervised and unsupervised clustering. Prereq: EECE 6020 or equiv.

EECE 6840. Neural Networks and Neural Computing. 3 cr. hrs.

EECE 6931. Topics in Electrical and Computer Engineering. 1-5 cr. hrs.
Course content announced prior to each offering. Students may enroll more than once as subject matter changes. Possible topics include computer operating systems, multiprogramming and multi-processing systems, computer architecture, optimal and adaptive control, stochastic control, estimation theory, and nonlinear analysis.

EECE 6932. Advanced Topics in Electrical and Computer Engineering. 3 cr. hrs.
Course content announced prior to each offering. Students may enroll more than once as subject matter changes. Possible topics include: computer operating systems, multiprogramming and multi-processing systems, computer architecture, optimal and adaptive control, stochastic control, estimation theory, and nonlinear analysis.

EECE 6952. Department Colloquium. 0 cr. hrs.
Scholarly presentations on current topics in electrical engineering and computer engineering and related areas by visiting and resident investigators. Required of all full-time graduate students each term. Required of all full-time EECE graduate students. SNC/UNC grade assessment.

EECE 6953. Seminar in Electrical and Computer Engineering. 0-3 cr. hrs.
0 credit will be SNC/UNC grade assessment; 1-3 credits will be graded. Prereq: Cons. of instr.

EECE 6964. Practicum for Research and Development in Computing. 3 cr. hrs.
Provides students, who are enrolled in the M.S. in computing program, an opportunity to participate in the practice of research and/or development in the area of computing. Course Guidelines are available from EECE and MSCS Departments. Available only to full-time students. At most, six credits of EECE 6964 OR MSCS 6964 may be counted toward graduation. S/U grade assessment. Prereq: 3.00 MU GPA; must be enrolled in Plan B option of the M.S. in computing program and have completed at least 21 credit hours of course work, with 15 credit hours earned in graduate (6000-level) courses.

EECE 6995. Independent Study in Electrical and Computer Engineering. 1-5 cr. hrs.
Graduate independent study project of either a theoretical or experimental nature. Prereq: Cons. of instr. and cons. of dept. ch.

EECE 6999. Master’s Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of instr.

EECE 8932. Advanced Topics in Electrical and Computer Engineering. 3 cr. hrs.
Course content announced prior to each offering. Students may enroll more than once as subject matter changes. Possible topics include: computer operating systems, multiprogramming and multi-processing systems, computer architecture, optimal and adaptive control, stochastic control, estimation theory, and nonlinear analysis. Prereq: Cons. of instr.

EECE 8995. Independent Study in Electrical and Computer Engineering. 1-5 cr. hrs.
Graduate independent study project of either a theoretical or experimental nature. Prereq: Cons. of instr. and cons. of dept. ch.

EECE 9999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of instr.

EECE 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

EECE 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

EECE 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

EECE 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

EECE 9986. Master’s Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
EECE 9987. Doctoral Comprehensive Exam Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

EECE 9988. Doctoral Comprehensive Exam Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

EECE 9989. Doctoral Comprehensive Exam Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

EECE 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

EECE 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

EECE 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

EECE 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

EECE 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

EECE 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Healthcare Technologies Management (HCTM)

Chairperson: Frank A. Pintar, Ph.D.
Director of Graduate Studies: Jay R. Goldberg, Ph.D., P.E.
Healthcare Technologies Management Program website (https://www.marquette.edu/engineering/healthcare-technologies-management/)

Degree Offered
Master of Science, Plan B only

Program Description
The healthcare technologies management program (https://www.marquette.edu/grad/programs-healthcare-technologies-management.php) is a collaborative effort between Marquette University and the Medical College of Wisconsin that combines management, technology and health care. The objective of the program is to educate professionals capable of managing the design, development, commercialization and regulatory compliance of diagnostic and therapeutic medical devices, and the implementation, utilization and assessment of hospital-based healthcare technologies.

Healthcare institutions, medical device companies, and healthcare consulting firms have a growing need for skilled professionals with technical and managerial skills, and an understanding of healthcare delivery and regulatory environments. Graduates of the program will have the education and skills needed to pursue career opportunities in clinical, industrial, and consulting environments. The program meets the needs of recent undergraduates seeking an advanced degree as well as employed engineers interested in opportunities to prepare for career advancement.

Elective courses, professional projects and internship opportunities enable students to customize their training to meet individual needs, interests and career goals. With the assistance of a faculty and industry/clinical adviser, students are required to design and complete a professional project in healthcare technologies management. This project will help develop skills that will be useful in the clinical or industrial environment.

The course offerings and schedules are designed to allow working students to pursue this master of science degree on a part-time basis. Full-time students can complete the program in three terms (12 months). Course topics include: technology assessment, ethics of technology utilization, standards and regulations, intellectual property, product development and the environment of healthcare delivery.

See the Graduate School of Management Bulletin’s transfer of credit policy (http://bulletin.marquette.edu/schoolofmanagement/academicregulations/#transferofcredit) regarding maximum business course transfer limits and requirements.

Prerequisites for Admission
Applications are accepted from students who have already completed a bachelor’s degree in engineering, science, or a clinical field from an accredited institution with a minimum GPA of 3.000 (on a 4.000 scale).

Application Requirements
Applicants must submit, directly to the Marquette University Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.
3. Two letters of recommendation.
4. A statement of purpose stating career goals and how the program will help in reaching those goals.
5. GRE (General Test only), GMAT, or Medical College Admission Test (MCAT). (Waived for individuals with a doctoral degree. Waived for students with a B.S. degree in engineering and a GPA of 3.300 or higher from a regionally accredited university in the United States.)
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

General Information
All admitted students are required to obtain and follow the department’s Graduate Student Handbook (http://www.marquette.edu/engineering/biomedical/documents/GradHandbookfinaldraftNov_08.pdf), which contains complete details about the program and degree requirements. This handbook is available through the Biomedical Engineering Office (414) 288-3375 and website.
# Healthcare Technologies Management Master's Requirements

The healthcare technologies management master's degree program consists of 37 credit hours. All students are required to take 30.5 credit hours at Marquette University and 6.5 credit hours at Medical College of Wisconsin. When taking courses at Medical College of Wisconsin, students must register for HCTM 6946 Medical College of Wisconsin/HCTM-Joint Degree through MU and for the matching MCW course through MCW.

## Required Course work

<table>
<thead>
<tr>
<th>Marquette University Courses (30.5 credits)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MBA 6020 Business Essentials: Accounting, Economics and Finance</td>
<td>4.5</td>
</tr>
<tr>
<td>MBA 6030 Business Essentials: Marketing, IT and Operations and Supply Chain</td>
<td>4.5</td>
</tr>
<tr>
<td>HCTM 6200 Health Care Technology Assessment</td>
<td>3</td>
</tr>
<tr>
<td>HCTM 6500 Management of Medical Product Development</td>
<td>2</td>
</tr>
<tr>
<td>HCTM 6931 Topics in Health Care Technologies Management</td>
<td>1</td>
</tr>
<tr>
<td>HCTM 6998 Professional Project in Health Care Technologies Management (1 credit hour for three terms)</td>
<td>3</td>
</tr>
<tr>
<td>HEAL 6840 The Environment of Health Care Delivery</td>
<td>2</td>
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<tr>
<td>MBA 6140 Leading People and Change</td>
<td>1.5</td>
</tr>
<tr>
<td>or MBA 6160 Leadership Coaching and Development</td>
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<tr>
<td>MBA 6110 Strategic Management Introduction</td>
<td>3</td>
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</tbody>
</table>

Elective courses - must be approved by program director 6

<table>
<thead>
<tr>
<th>Medical College of Wisconsin Courses (6.5 credits)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HCTM 6946 Medical College of Wisconsin/HCTM-Joint Degree (and MCW 14200 Survey of Biomedical Engineering Technology)</td>
<td>3</td>
</tr>
<tr>
<td>HCTM 6946 Medical College of Wisconsin/HCTM-Joint Degree (and MCW 14211 Biomedical Technology Standards and Regulations)</td>
<td>2</td>
</tr>
<tr>
<td>HCTM 6946 Medical College of Wisconsin/HCTM-Joint Degree (and MCW 14212 Ethics of Technology Utilization)</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Total Credit Hours 37

## Courses

### HCTM 6200. Health Care Technology Assessment. 3 cr. hrs.

Introduction to health care technology assessment methods for hospital systems and medical businesses encompassing technical, clinical, and business elements. Topics include: clinical results analysis, gold standard comparison, Bland-Altman analysis, sensitivity/specificity analysis, and business trade-off analysis. Extensively uses case studies of present and developing medical technologies as examples of applied assessment methodologies.

### HCTM 6500. Management of Medical Product Development. 2 cr. hrs.

Presents requirements for the design, development, and commercialization of new medical devices with an emphasis on management of the product development process. Topics include: formation and management of effective teams, creating an environment conducive to creativity and innovation, managing the R&D/Marketing and R&D/Manufacturing interfaces, motivation of technical personnel, and others.

### HCTM 6931. Topics in Health Care Technologies Management. 1 cr. hr.

Focuses on the transition from engineer to manager. Includes communication skills, effective interviewing for managers, conducting performance appraisals, facilitating effective meetings and decision making/problem solving in groups, management and leadership of technical personnel, team building and conflict management. S/U grade assessment.

### HCTM 6946. Medical College of Wisconsin/HCTM-Joint Degree. 1-3 cr. hrs.

Registration for this course allows students in the joint Marquette University/Medical College of Wisconsin health care technologies management program to take courses at the Medical College of Wisconsin to fulfill the elective requirements of the program.

### HCTM 6995. Independent Study in Health Care Technologies Management. 1-3 cr. hrs.

Prereq: Cons. of prog. dir.

### HCTM 6998. Professional Project in Health Care Technologies Management. 1-3 cr. hrs.

During the first term, students identify a project or internship involving the management of health care technologies, and present it to the faculty for approval. Project selection based on the career goals and interests of the student. Faculty and industry/hospital advisers assist students. Project completed during the third term and a final report presented to the faculty.
Mechanical Engineering (MEEN)

Chairperson: John Borg, Ph.D., P.E.
Mechanical Engineering Graduate Programs website (https://www.marquette.edu/grad/programs-mechanical-engineering.php)

Degrees Offered
Master of Science, Master of Engineering; Doctor of Philosophy

Mission Statement
We immerse individuals in an active environment to cultivate broadly educated mechanical engineers who balance theory with practice for advancing knowledge, solving problems and serving society.

Program Description
The Department of Mechanical Engineering offers two master's programs and a doctoral program. Course work and research in the department's programs may involve the broad fundamentals of mechanical engineering or may concentrate on one or more of the following fields: energy systems, manufacturing and materials systems, and mechanical systems. In these fields, engineering principles are applied not only to traditional equipment and methods but also to modern and emerging technologies. Typically, the engineering course work and research are augmented by laboratory studies. Although the study of advanced engineering mathematics and, often, basic science is necessary in all programs of study, the selection of subjects may vary depending upon the field of specialization and the student's professional objectives.

Prerequisites for Admission
Adequate preparation in engineering, mathematics and science is required. If an applicant does not have an adequate undergraduate background, some remedial studies may be necessary, depending upon the graduate field of specialization the applicant selects.

Application Requirements
Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. Three letters of recommendation.
4. A brief statement of purpose (not required for master of engineering/M.E. applicants) and copies of any published work, including previous master's theses and essays.
5. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.
6. GRE scores (General Test only). Scores from the GRE exam are a requirement of admission for all students in the master's, doctoral, and accelerated degree programs.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student's record.

Mechanical Engineering Master of Science (M.S.) Requirements

Specializations: Energy Systems, Manufacturing and Materials Systems, Mechanical Systems

Upon enrolling in the master of science program in mechanical engineering, a student selects one of three areas of specialization: energy systems, manufacturing and materials systems, or mechanical systems. During the first term, a curriculum, along with a research program, is designed with an academic adviser which is specific to the goals of the individual student. The program includes course work in engineering, mathematics and science with the following requirements:

- A minimum of 24 credit hours of course work.
- A minimum of 3 credit hours of an approved math course (MEEN 6101 Advanced Engineering Analysis 1, MEEN 6102 Advanced Engineering Analysis 2, MEEN 6103 Approximate Methods in Engineering Analysis, EECE 6010 Advanced Engineering Mathematics), or equivalent. An equivalent math requirement from another department must be approved by the student's adviser and the director of graduate studies.
- A minimum of one half of the total course work must be at the 6000 level.
- A minimum of one half of the total course work must be taken from the Department of Mechanical Engineering. No more than 12 credit hours may be taken outside the Department of Mechanical Engineering and these courses must be approved by the student's adviser and the director of graduate studies.
- At most, a maximum of 3 credit hours of an Independent Study course may be included in the course work total.
• Six (6) credit hours of thesis work, completion of an oral thesis defense/comprehensive exam and submission of an approved thesis.
• Continuous participation in the departmental graduate seminar series (MEEN 6960 Seminar in Mechanical Engineering).
• Successful acceptance of a conference proceeding or refereed journal article.
• A maximum of 6 credit hours of graduate-level credit from other approved institutions may be accepted toward the requirement of the degree as long as requirements are met, and prior approval must be received from the student’s adviser and director of graduate studies.

Specialization Requirements

Energy Systems

The energy systems specialization typically entails advanced study of (a) thermodynamics, fluid mechanics, heat and mass transfer and combustion; (b) the application of these principles to phenomena and devices which constitute energy-conversion systems; and (c) the analysis, simulation and design of such systems as well as plants; e.g., chemical, metallurgical, food, etc., which are energy-intensive. Current research topics include: plant optimization, cogeneration systems, fluid mechanics and heat transfer in surface mount technology, engine emissions/process effluents and jet engine propulsion systems, energy dissipative materials, and soot modeling.

Required math course: 3

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>MEEN 6101</td>
<td>Advanced Engineering Analysis 1</td>
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<tr>
<td>or MEEN 6102</td>
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</tr>
<tr>
<td>or MEEN 6103</td>
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</tr>
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<td>or EECE 6010</td>
<td>Advanced Engineering Mathematics</td>
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Required specialization courses: 6

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>MEEN 5325</td>
<td>Intermediate Fluid Mechanics</td>
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<tr>
<td>MEEN 5360</td>
<td>Intermediate Thermodynamics</td>
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Additional requirements:

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<th>Course Code</th>
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<tbody>
<tr>
<td>MEEN 6960</td>
<td>Seminar in Mechanical Engineering (taken every term)</td>
</tr>
<tr>
<td>MEEN 6999</td>
<td>Master’s Thesis</td>
</tr>
</tbody>
</table>

Additional course work chosen from the following: 15

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>MEEN 5260</td>
<td>Introduction to Continuum Mechanics</td>
</tr>
<tr>
<td>MEEN 5265</td>
<td>Intermediate Finite Element Methods</td>
</tr>
<tr>
<td>MEEN 5310</td>
<td>Combustion: Thermochemistry, Kinetics and Applications</td>
</tr>
<tr>
<td>MEEN 5350</td>
<td>Transport Phenomena</td>
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<tr>
<td>MEEN 5410</td>
<td>Experimental Design</td>
</tr>
<tr>
<td>MEEN 5931</td>
<td>Topics in Mechanical Engineering</td>
</tr>
<tr>
<td>MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
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<tr>
<td>MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
</tr>
<tr>
<td>MEEN 6260</td>
<td>Multiscale Material Modeling</td>
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<tr>
<td>MEEN 6310</td>
<td>Advanced Fluid Mechanics</td>
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<tr>
<td>MEEN 6320</td>
<td>Turbulence</td>
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<tr>
<td>MEEN 6330</td>
<td>Statistical Thermodynamics</td>
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<tr>
<td>MEEN 6340</td>
<td>Thermal Radiation Heat Transfer</td>
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<tr>
<td>MEEN 6350</td>
<td>Convective Heat and Mass Transfer</td>
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<tr>
<td>MEEN 6360</td>
<td>Computational Fluid Mechanics</td>
</tr>
<tr>
<td>MEEN 6370</td>
<td>Combustion Chemistry and Mechanisms</td>
</tr>
<tr>
<td>MEEN 6931</td>
<td>Topics in Mechanical Engineering</td>
</tr>
<tr>
<td>MEEN 6995</td>
<td>Independent Study in Mechanical Engineering</td>
</tr>
</tbody>
</table>

Total Credit Hours 30

Manufacturing and Materials Systems

The manufacturing and materials systems specialization typically entails advanced study in (a) evaluation of materials and their behavior; (b) processes for changing material shape and properties; (c) approaches to economizing complex systems; (d) material-man-machine interfaces; and (e) analysis of the manufacturing complex. Normally, each of these multi-disciplinary areas requires certain core courses along with specialized studies, which may include advanced courses in other engineering disciplines, courses in mathematics and statistics and/or courses in business administration. Current research topics include: cellular manufacturing, polishing and mass finishing processes, flexible assembly, robotic systems, production integration, ergonomics, reliability/quality estimation, human performance and safety evaluation and materials forming and joining processes.
Required math course:

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<tr>
<td>MEEN 5410</td>
<td>Experimental Design</td>
</tr>
<tr>
<td>MEEN 5440</td>
<td>Processing and Forming of Materials</td>
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Additional requirements:

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<tr>
<td>MEEN 5220</td>
<td>Intermediate Dynamics</td>
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<tr>
<td>MEEN 5240</td>
<td>Polymers and Polymer Composites</td>
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<tr>
<td>MEEN 5245</td>
<td>Fatigue and Fracture Mechanics</td>
</tr>
<tr>
<td>MEEN 5260</td>
<td>Introduction to Continuum Mechanics</td>
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<tr>
<td>MEEN 5265</td>
<td>Intermediate Finite Element Methods</td>
</tr>
<tr>
<td>MEEN 5275</td>
<td>Mechatronics</td>
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<tr>
<td>MEEN 5420</td>
<td>Failure Analysis</td>
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<td>MEEN 5430</td>
<td>Powder Metallurgy</td>
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<tr>
<td>MEEN 5450</td>
<td>Mechanical Behavior of Materials</td>
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<tr>
<td>MEEN 5460</td>
<td>Work Measurement and Facilities Design</td>
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<tr>
<td>MEEN 5475</td>
<td>Ergonomics</td>
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<td>MEEN 5485</td>
<td>Welding Engineering</td>
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<td>Approximate Methods in Engineering Analysis</td>
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<td>MEEN 6250</td>
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<td>MEEN 6473</td>
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<td>MEEN 6475</td>
<td>Advanced Ergonomics/Human Factors Engineering</td>
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<td>MEEN 6480</td>
<td>Metal Forming</td>
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<tr>
<td>MEEN 6931</td>
<td>Topics in Mechanical Engineering</td>
</tr>
<tr>
<td>MEEN 6995</td>
<td>Independent Study in Mechanical Engineering</td>
</tr>
</tbody>
</table>

Total Credit Hours: 30

**Mechanical Systems**

The mechanical systems specialization typically entails advanced study of (a) mechanical system design and analysis; and (b) modeling, simulation, and control. Mechanical design and analysis focuses on the use of physical and mathematical principles to understand the behavior of mechanical systems. It includes computer-aided optimal design, such as the design of multi-body, multi-degree-of-freedom mechanical systems. Modeling, simulation and control involve the study of theoretical mechanics in conjunction with computational applications including advanced dynamics, kinematics and stress analysis. Other applications include the modeling and control of manufacturing processes, including robotics and automated deformation processing. Current research areas include: composite and polymeric materials, control in automated assembly, design of compliant machine mechanisms, metal cutting/forming mechanics, finite element methods and multiscale material modeling.

Required math course:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEEN 6101</td>
<td>Advanced Engineering Analysis 1</td>
</tr>
<tr>
<td>or MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
</tr>
<tr>
<td>or MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
</tr>
<tr>
<td>or EECE 6010</td>
<td>Advanced Engineering Mathematics</td>
</tr>
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</table>

Required specialization courses:

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<th>Title</th>
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</thead>
<tbody>
<tr>
<td>MEEN 5220</td>
<td>Intermediate Dynamics</td>
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<tr>
<td>MEEN 5230</td>
<td>Intermediate Mechanics of Materials</td>
</tr>
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Additional requirements:

<table>
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<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<td>MEEN 6960</td>
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Additional course work chosen from the following: 15

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<td>Fatigue and Fracture Mechanics</td>
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<td>MEEN 5250</td>
<td>Design of Machine Elements 2</td>
</tr>
<tr>
<td>MEEN 5260</td>
<td>Introduction to Continuum Mechanics</td>
</tr>
<tr>
<td>MEEN 5265</td>
<td>Intermediate Finite Element Methods</td>
</tr>
<tr>
<td>MEEN 5270</td>
<td>Physical Systems Modeling</td>
</tr>
<tr>
<td>MEEN 5275</td>
<td>Mechatronics</td>
</tr>
<tr>
<td>MEEN 5410</td>
<td>Experimental Design</td>
</tr>
<tr>
<td>MEEN 5420</td>
<td>Failure Analysis</td>
</tr>
<tr>
<td>MEEN 5450</td>
<td>Mechanical Behavior of Materials</td>
</tr>
<tr>
<td>MEEN 5570</td>
<td>Biomaterials Science and Engineering</td>
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<td>Topics in Mechanical Engineering</td>
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<tr>
<td>MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
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<tr>
<td>MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
</tr>
<tr>
<td>MEEN 6220</td>
<td>Advanced Dynamics</td>
</tr>
<tr>
<td>MEEN 6225</td>
<td>Advanced Vibrations</td>
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<tr>
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<td>Advanced Mechanics of Materials</td>
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<td>MEEN 6240</td>
<td>Composite Materials</td>
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<td>MEEN 6250</td>
<td>Industrial Robotics</td>
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<td>MEEN 6260</td>
<td>Multiscale Material Modeling</td>
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<tr>
<td>MEEN 6931</td>
<td>Topics in Mechanical Engineering</td>
</tr>
<tr>
<td>MEEN 6995</td>
<td>Independent Study in Mechanical Engineering</td>
</tr>
</tbody>
</table>

Total Credit Hours 30

Master’s Learning Outcomes

1. Apply knowledge of specialized mechanical engineering concepts in engineering analysis and design in a chosen area of specialization.
2. Effectively communicate ideas on design and analysis to peers, clients and customers.
3. Conduct guided research in a chosen area of specialization.

Accelerated Degree Program

The accelerated program enables students to earn both a master of science degree and a bachelor of science degree from the College of Engineering in the span of five years. Only the thesis option is available with this program. Qualified students (3.500/4.000 GPA) who are enrolled in the Department of Mechanical Engineering at Marquette University may apply for admission to this program during their undergraduate junior year. Students must submit an application to the Graduate School, indicate their interest in the five year program, and meet all other admission criteria as stated in the Application Requirements section.

Students select graduate-level courses in their senior undergraduate year as their electives; these elective courses count toward both the undergraduate and graduate degrees. However, only a maximum of 6 credit hours can apply toward the graduate degree. Upon completion of the first term as a master’s candidate, the student must petition the Graduate School to transfer courses taken as an undergraduate to the master’s degree.

Students begin their research for the thesis the summer between their junior and senior years. Their research is continued the summer between their senior and fifth years and throughout their fifth year, culminating in the preparation of a written thesis and defense.

Mechanical Engineering Master of Engineering (M.E.) Requirements

Specializations: Energy Systems, Manufacturing and Materials Systems, Mechanical Systems

Upon enrolling in the master of engineering program in mechanical engineering, a student selects one of three areas of specialization: energy systems, manufacturing and materials systems, or mechanical systems. A curriculum is designed along with an academic adviser which is specific to the goals of the individual student. The program includes course work in engineering, mathematics and science with the following requirements:
• 30 credit hours of course work selected from the requirements below for each specialization.
• A minimum of 3 credit hours of an approved math course (MEEN 6101 Advanced Engineering Analysis 1, MEEN 6102 Advanced Engineering Analysis 2, MEEN 6103 Approximate Methods in Engineering Analysis or EECE 6010 Advanced Engineering Mathematics), or equivalent. An equivalent math requirement from another department must be approved by the student’s adviser and the director of graduate studies.
• A minimum of one half of the total course work must be at the 6000 level.
• A minimum of one half of the total course work must be taken from the Department of Mechanical Engineering. No more than 12 credit hours may be taken outside the Department of Mechanical Engineering and these courses must be approved by the student’s adviser and the director of graduate studies.
• At most, a maximum of 3 credit hours of an Independent Study course may be included in the course work total.
• Completion of a capstone comprehensive examination consisting of two parts:
  1. A mathematics portion drawn from material presented in MEEN 6101 Advanced Engineering Analysis 1.
  2. An area of specialization portion drawn from material presented in required specialization courses within the area of the selected specialization.
• A maximum of 6 credit hours of graduate-level credit from other approved institutions may be accepted toward the requirement of the degree as long as requirements are met, and prior approval must be received from the student’s adviser and director of graduate studies.

Specialization Requirements

Energy Systems

Required math course: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEEN 6101</td>
<td>Advanced Engineering Analysis 1</td>
</tr>
<tr>
<td>or MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
</tr>
<tr>
<td>or MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
</tr>
<tr>
<td>or EECE 6010</td>
<td>Advanced Engineering Mathematics</td>
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Required specialization courses: 6

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<th>Title</th>
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<tbody>
<tr>
<td>MEEN 5325</td>
<td>Intermediate Fluid Mechanics</td>
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<tr>
<td>MEEN 5360</td>
<td>Intermediate Thermodynamics</td>
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Additional course work chosen from the following: 21

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>MEEN 5260</td>
<td>Introduction to Continuum Mechanics</td>
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<tr>
<td>MEEN 5265</td>
<td>Intermediate Finite Element Methods</td>
</tr>
<tr>
<td>MEEN 5310</td>
<td>Combustion: Thermochemistry, Kinetics and Applications</td>
</tr>
<tr>
<td>MEEN 5350</td>
<td>Transport Phenomena</td>
</tr>
<tr>
<td>MEEN 5410</td>
<td>Experimental Design</td>
</tr>
<tr>
<td>MEEN 5931</td>
<td>Topics in Mechanical Engineering</td>
</tr>
<tr>
<td>MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
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<tr>
<td>MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
</tr>
<tr>
<td>MEEN 6260</td>
<td>Multiscale Material Modeling</td>
</tr>
<tr>
<td>MEEN 6310</td>
<td>Advanced Fluid Mechanics</td>
</tr>
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<td>MEEN 6320</td>
<td>Turbulence</td>
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<td>MEEN 6330</td>
<td>Statistical Thermodynamics</td>
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<tr>
<td>MEEN 6340</td>
<td>Thermal Radiation Heat Transfer</td>
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<td>MEEN 6350</td>
<td>Convective Heat and Mass Transfer</td>
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<td>MEEN 6360</td>
<td>Computational Fluid Mechanics</td>
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<td>MEEN 6370</td>
<td>Combustion Chemistry and Mechanisms</td>
</tr>
<tr>
<td>MEEN 6931</td>
<td>Topics in Mechanical Engineering</td>
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<tr>
<td>MEEN 6960</td>
<td>Seminar in Mechanical Engineering</td>
</tr>
<tr>
<td>MEEN 6995</td>
<td>Independent Study in Mechanical Engineering</td>
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</tbody>
</table>

Additional courses as approved by adviser (no more than 6 credit hours total)

Total Credit Hours 30

Manufacturing and Materials Systems

Required math course: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>MEEN 6101</td>
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</tr>
<tr>
<td>or MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
</tr>
<tr>
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<td>-------------</td>
</tr>
<tr>
<td>MEEN 6101</td>
<td>Advanced Engineering Analysis 1</td>
</tr>
<tr>
<td>MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
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<tr>
<td>MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
</tr>
<tr>
<td>MEEN 6010</td>
<td>Advanced Engineering Mathematics</td>
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### Required specialization courses:

<table>
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<th>Course Title</th>
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<tbody>
<tr>
<td>MEEN 5410</td>
<td>Experimental Design</td>
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<tr>
<td>MEEN 5440</td>
<td>Processing and Forming of Materials</td>
</tr>
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</table>

### Additional course work chosen from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>MEEN 5220</td>
<td>Intermediate Dynamics</td>
</tr>
<tr>
<td>MEEN 5240</td>
<td>Polymers and Polymer Composites</td>
</tr>
<tr>
<td>MEEN 5245</td>
<td>Fatigue and Fracture Mechanics</td>
</tr>
<tr>
<td>MEEN 5260</td>
<td>Introduction to Continuum Mechanics</td>
</tr>
<tr>
<td>MEEN 5265</td>
<td>Intermediate Finite Element Methods</td>
</tr>
<tr>
<td>MEEN 5275</td>
<td>Mechatronics</td>
</tr>
<tr>
<td>MEEN 5420</td>
<td>Failure Analysis</td>
</tr>
<tr>
<td>MEEN 5430</td>
<td>Powder Metallurgy</td>
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<td>MEEN 5450</td>
<td>Mechanical Behavior of Materials</td>
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<tr>
<td>MEEN 5460</td>
<td>Work Measurement and Facilities Design</td>
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<td>MEEN 5475</td>
<td>Ergonomics</td>
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<td>MEEN 5485</td>
<td>Welding Engineering</td>
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<td>Advanced Engineering Analysis 2</td>
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<td>MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
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<tr>
<td>MEEN 6250</td>
<td>Industrial Robotics</td>
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<td>MEEN 6260</td>
<td>Multiscale Material Modeling</td>
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<td>Statistical Methods in Engineering</td>
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<tr>
<td>MEEN 6473</td>
<td>Computer Integrated Manufacturing</td>
</tr>
<tr>
<td>MEEN 6475</td>
<td>Advanced Ergonomics/Human Factors Engineering</td>
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<td>MEEN 6480</td>
<td>Metal Forming</td>
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<td>MEEN 6931</td>
<td>Topics in Mechanical Engineering</td>
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<tr>
<td>MEEN 6960</td>
<td>Seminar in Mechanical Engineering</td>
</tr>
<tr>
<td>MEEN 6995</td>
<td>Independent Study in Mechanical Engineering</td>
</tr>
</tbody>
</table>

**Additional courses as approved by adviser (no more than 6 credit hours total)**

### Total Credit Hours: 30

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**Mechanical Systems**

**Required math course:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEEN 6101</td>
<td>Advanced Engineering Analysis 1</td>
</tr>
<tr>
<td>MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
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<tr>
<td>MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
</tr>
<tr>
<td>MEEN 6010</td>
<td>Advanced Engineering Mathematics</td>
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### Required specialization courses:

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MEEN 5220</td>
<td>Intermediate Dynamics</td>
</tr>
<tr>
<td>MEEN 5230</td>
<td>Intermediate Mechanics of Materials</td>
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### Additional course work chosen from the following:

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
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<td>Polymers and Polymer Composites</td>
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<td>Fatigue and Fracture Mechanics</td>
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<tr>
<td>MEEN 5250</td>
<td>Design of Machine Elements 2</td>
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<tr>
<td>MEEN 5260</td>
<td>Introduction to Continuum Mechanics</td>
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<tr>
<td>MEEN 5265</td>
<td>Intermediate Finite Element Methods</td>
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<td>MEEN 5270</td>
<td>Physical Systems Modeling</td>
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<td>MEEN 5275</td>
<td>Mechatronics</td>
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<tr>
<td>MEEN 5410</td>
<td>Experimental Design</td>
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<td>MEEN 5420</td>
<td>Failure Analysis</td>
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</table>
MEEN 5450 Mechanical Behavior of Materials
MEEN 5570 Biomaterials Science and Engineering
MEEN 5931 Topics in Mechanical Engineering
MEEN 6102 Advanced Engineering Analysis 2
MEEN 6103 Approximate Methods in Engineering Analysis
MEEN 6220 Advanced Dynamics
MEEN 6225 Advanced Vibrations
MEEN 6230 Advanced Mechanics of Materials
MEEN 6240 Composite Materials
MEEN 6250 Industrial Robotics
MEEN 6260 Multiscale Material Modeling
MEEN 6931 Topics in Mechanical Engineering
MEEN 6960 Seminar in Mechanical Engineering
MEEN 6995 Independent Study in Mechanical Engineering
Additional courses as approved by adviser (no more than 6 credit hours total)

Total Credit Hours 30

Master's Learning Outcomes
1. Apply knowledge of specialized mechanical engineering concepts in engineering analysis and design in a chosen area of specialization.
2. Effectively communicate ideas on design and analysis to peers, clients and customers.

Mechanical Engineering Doctoral Requirements

Specializations: Energy Systems, Manufacturing and Materials Systems, Mechanical Systems

A doctoral student must complete a program of study prepared in collaboration with their permanent adviser. This program of study is outlined on an approved Doctoral Program Planning Form which must be submitted within the first year of the student's doctoral studies. The program requires the following:

• 48 credit hours of course work beyond the baccalaureate degree.
• 12 credit hours of dissertation work.
• At least 6 credit hours of an approved MEEN math course or equivalent. An equivalent math requirement from another department must be approved by the student's adviser and the director of graduate studies.
• Continuous participation in the department graduate seminar series (MEEN 6960 Seminar in Mechanical Engineering).
• Doctoral students are required to submit a refereed journal publication and a conference proceeding prior to graduation. The requirement is submission, not necessarily publication.
• At least one-half of the total course work must be at the 6000 level.
• At least one-half of the total course work must be taken from the Department of Mechanical Engineering. No more than 12 credit hours may be taken outside the Department of Mechanical Engineering and these courses must be approved by the student's adviser and the director of graduate studies.
• Completion of all university Graduate School requirements.
• Full-time enrollment.
• A maximum of 3 credit hours of an Independent Study course may be included in the course work total.
• A maximum of 6 credit hours of graduate-level credit from other accredited institutions may be accepted toward the requirement of the degree as long as requirements are met, and prior approval must be received from the student's adviser and director of graduate studies.

In cases in which the student enters the program with a master's degree in mechanical engineering or a closely related field, the student may request (in writing) that the department and the Graduate School allow credits from the master's degree to satisfy up to 24 credit hours of the required course work.

A doctoral student must complete a departmental written proficiency exam prior to completion of the Marquette University doctoral residency requirement. This exam is comprised of two components. One component assesses proficiency in engineering mathematics and the other assesses proficiency in the student’s declared area of specialization: energy systems, manufacturing and materials systems, or mechanical systems. This examination is based upon material presented in the advanced undergraduate and master’s degree level course work (approved math courses are MEEN 6101 Advanced Engineering Analysis 1, MEEN 6102 Advanced Engineering Analysis 2, MEEN 6103 Approximate Methods in Engineering Analysis and EECE 6010 Advanced Engineering Mathematics).

A student must pass a doctoral qualifying examination (DQE) administered by their doctoral committee within one academic year after completing course work requirements. This exam must be passed at least one year prior to the submission and successful public defense of the dissertation. The
Specialization Requirements

Energy Systems

A specialization in energy systems typically entails advanced study of (a) thermodynamics, fluid mechanics, heat and mass transfer and combustion; (b) the application of these principles to phenomena and devices which constitute energy-conversion systems; and (c) the analysis, simulation and design of such systems as well as plants; e.g., chemical, metallurgical, food, etc., which are energy-intensive. Current research topics include: plant optimization, cogeneration systems, fluid mechanics and heat transfer in surface mount technology, engine emissions/process effluents and jet engine propulsion systems, energy dispersive materials, combustion and soot modeling.

Required math courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
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<td>MEEN 6102</td>
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<td>or MEEN 6103</td>
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</tr>
<tr>
<td>or EECE 6010</td>
<td>Advanced Engineering Mathematics</td>
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Required specialization courses:

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<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>MEEN 5325</td>
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<td>MEEN 5360</td>
<td>Intermediate Thermodynamics</td>
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Additional requirements:

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<th>Course</th>
<th>Title</th>
<th>Credits</th>
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Additional course work chosen from the following:

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<th>Credits</th>
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<tbody>
<tr>
<td>MEEN 5260</td>
<td>Introduction to Continuum Mechanics</td>
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<tr>
<td>MEEN 5265</td>
<td>Intermediate Finite Element Methods</td>
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</tr>
<tr>
<td>MEEN 5310</td>
<td>Combustion: Thermochemistry, Kinetics and Applications</td>
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<tr>
<td>MEEN 5350</td>
<td>Transport Phenomena</td>
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<td>MEEN 5410</td>
<td>Experimental Design</td>
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<tr>
<td>MEEN 5931</td>
<td>Topics in Mechanical Engineering</td>
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<tr>
<td>MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
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<td>MEEN 6330</td>
<td>Statistical Thermodynamics</td>
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<td>MEEN 6340</td>
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<td>MEEN 6350</td>
<td>Convective Heat and Mass Transfer</td>
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<td>Computational Fluid Mechanics</td>
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<td>MEEN 6370</td>
<td>Combustion Chemistry and Mechanisms</td>
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<td>MEEN 6931</td>
<td>Topics in Mechanical Engineering</td>
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</tr>
<tr>
<td>MEEN 6995</td>
<td>Independent Study in Mechanical Engineering</td>
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</tbody>
</table>

Total Credit Hours 60

Manufacturing and Materials Systems

A specialization in manufacturing and materials systems typically entails advanced study in (a) evaluation of materials and their behavior; (b) processes for changing material shape and properties; (c) approaches to economizing complex systems; (d) material-man-machine interfaces; and (e) analysis of the manufacturing process. Normally, each of these multi-disciplinary areas requires certain core courses along with specialized studies, which may include advanced courses in other engineering disciplines, courses in mathematics and statistics and/or courses in business administration. Current research topics include: cellular manufacturing, polishing and mass finishing processes, flexible assembly, robotic systems, production integration, ergonomics, reliability/quality estimation, human performance and safety evaluation, and materials forming and joining processes.

Required math courses:

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MEEN 6101</td>
<td>Advanced Engineering Analysis 1</td>
<td>3</td>
</tr>
<tr>
<td>MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
<td>3</td>
</tr>
<tr>
<td>or MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>
### Mechanical Systems

A specialization in mechanical systems typically entails advanced study of (a) mechanical system design and analysis; and (b) modeling, simulation, and control. Mechanical design and analysis focuses on the use of physical and mathematical principles to understand the behavior of mechanical systems. It includes computer-aided optimal design, such as the design of multi-body, multi-degree-of-freedom mechanical systems. The modeling, simulation and control area involves the study of theoretical mechanics in conjunction with computational applications including advanced dynamics, kinematics and stress analysis. Other applications include the modeling and control of manufacturing processes, including robotics and automated deformation processing. Current research areas include: composite and polymeric materials, control in automated assembly, design of compliant mechanisms, metal cutting/forming mechanics, finite element methods and multiscale material modeling.

#### Required math courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEEN 6101</td>
<td>Advanced Engineering Analysis 1</td>
<td>3</td>
</tr>
<tr>
<td>MEEN 6102</td>
<td>Advanced Engineering Analysis 2</td>
<td>3</td>
</tr>
<tr>
<td>or MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
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<tr>
<td>or EECE 6010</td>
<td>Advanced Engineering Mathematics</td>
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#### Required specialization courses:

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<tr>
<td>MEEN 5220</td>
<td>Intermediate Dynamics</td>
<td>3</td>
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<tr>
<td>MEEN 5230</td>
<td>Intermediate Mechanics of Materials</td>
<td>3</td>
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#### Additional requirements:

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<tr>
<td>MEEN 6960</td>
<td>Seminar in Mechanical Engineering (taken every term)</td>
<td>0</td>
</tr>
<tr>
<td>MEEN 8999</td>
<td>Doctoral Dissertation</td>
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#### Additional course work chosen from the following:

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<thead>
<tr>
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<th>Credits</th>
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<tr>
<td>MEEN 5220</td>
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<tr>
<td>MEEN 5230</td>
<td>Intermediate Mechanics of Materials</td>
<td></td>
</tr>
<tr>
<td>MEEN 5240</td>
<td>Polymers and Polymer Composites</td>
<td></td>
</tr>
<tr>
<td>MEEN 5245</td>
<td>Fatigue and Fracture Mechanics</td>
<td></td>
</tr>
<tr>
<td>MEEN 5260</td>
<td>Introduction to Continuum Mechanics</td>
<td></td>
</tr>
<tr>
<td>MEEN 5265</td>
<td>Intermediate Finite Element Methods</td>
<td></td>
</tr>
<tr>
<td>MEEN 5275</td>
<td>Mechatronics</td>
<td></td>
</tr>
<tr>
<td>MEEN 5420</td>
<td>Failure Analysis</td>
<td></td>
</tr>
<tr>
<td>MEEN 5430</td>
<td>Powder Metallurgy</td>
<td></td>
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<tr>
<td>MEEN 5450</td>
<td>Mechanical Behavior of Materials</td>
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<td>MEEN 5460</td>
<td>Work Measurement and Facilities Design</td>
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<tr>
<td>MEEN 5475</td>
<td>Ergonomics</td>
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<tr>
<td>MEEN 5485</td>
<td>Welding Engineering</td>
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<td>MEEN 5931</td>
<td>Topics in Mechanical Engineering</td>
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<td>MEEN 6103</td>
<td>Approximate Methods in Engineering Analysis</td>
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<td>MEEN 6250</td>
<td>Industrial Robotics</td>
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<tr>
<td>MEEN 6260</td>
<td>Multiscale Material Modeling</td>
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<tr>
<td>MEEN 6470</td>
<td>Statistical Methods in Engineering</td>
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<td>MEEN 6473</td>
<td>Computer Integrated Manufacturing</td>
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<td>MEEN 6475</td>
<td>Advanced Ergonomics/Human Factors Engineering</td>
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<td>MEEN 6480</td>
<td>Metal Forming</td>
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<td>MEEN 6931</td>
<td>Topics in Mechanical Engineering</td>
<td></td>
</tr>
<tr>
<td>MEEN 6995</td>
<td>Independent Study in Mechanical Engineering</td>
<td></td>
</tr>
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</table>

**Total Credit Hours**: 60
MEEN 5240  Polymers and Polymer Composites
MEEN 5245  Fatigue and Fracture Mechanics
MEEN 5250  Design of Machine Elements 2
MEEN 5260  Introduction to Continuum Mechanics
MEEN 5265  Intermediate Finite Element Methods
MEEN 5270  Physical Systems Modeling
MEEN 5275  Mechatronics
MEEN 5410  Experimental Design
MEEN 5420  Failure Analysis
MEEN 5450  Mechanical Behavior of Materials
MEEN 5570  Biomaterials Science and Engineering
MEEN 5931  Topics in Mechanical Engineering
MEEN 6102  Advanced Engineering Analysis 2
MEEN 6103  Approximate Methods in Engineering Analysis
MEEN 6220  Advanced Dynamics
MEEN 6225  Advanced Vibrations
MEEN 6230  Advanced Mechanics of Materials
MEEN 6240  Composite Materials
MEEN 6250  Industrial Robotics
MEEN 6260  Multiscale Material Modeling
MEEN 6931  Topics in Mechanical Engineering
MEEN 6995  Independent Study in Mechanical Engineering

Total Credit Hours 60

**Doctoral Learning Outcomes**

1. Apply knowledge of advanced concepts (i.e., concepts beyond those learned during the master of science program) in engineering mathematics and two out of three areas of specializations offered in the department (mechanical systems, energy systems, manufacturing and materials systems).

2. Communicate ideas (specific to an area of specialization) via peer reviewed published and/or presented materials.

3. Conduct original research in a chosen area of specialization.

**Courses**

**MEEN 5220. Intermediate Dynamics. 3 cr. hrs.**
Develop an understanding of the principles of 3D rigid body kinematics (motion) and kinetics (forces and accelerations). Use these principles to analyze the dynamic behavior of mechanical systems. Learn to use analytical mechanics tools including virtual work and Lagrange's method. Develop a systematic approach for solving engineering problems.

**MEEN 5230. Intermediate Mechanics of Materials. 3 cr. hrs.**
Review of beam theory; asymmetric bending, shear center, thin-walled sections; torsion of non-circular sections, open and closed thin-walled sections; energy methods, Castigliano's second theorem, statically indeterminate structures, internal static indeterminacy; curved beams.

**MEEN 5240. Polymers and Polymer Composites. 3 cr. hrs.**
Introduction to physical/chemical structure of polymers, polymer characterization, polymer material properties and mechanical testing methods, elastic and viscoelastic polymer response, processing methods, composite materials and the selection of polymers in design applications.

**MEEN 5245. Fatigue and Fracture Mechanics. 3 cr. hrs.**
Application of fatigue and fracture models to engineering design. Stress-life (high-cycle), strain-life (low-cycle), and fatigue crack growth models for fatigue. Introduction to linear elastic fracture mechanics. Statistical considerations in failure. Fail-safe design practices. Includes illustrative case studies.

**MEEN 5250. Design of Machine Elements 2. 3 cr. hrs.**
Detailed design of gears and cams. Emphasizes integration of dynamics into design of machinery. Topics include balancing of machinery, selection of motors and critical frequency analysis, and miscellaneous power transmission components. Use of spreadsheets and computer programs to assist in the design of various components.

**MEEN 5260. Introduction to Continuum Mechanics. 3 cr. hrs.**
Introduction to tensor notation; tensor analysis and coordinate system invariance; analysis of stress, strain and rate of strain for infinitesimal and finite deformation; application of Newtonian mechanics to deformable media; mechanical constitutive equations; field equations for solid and fluid mechanics.
MEEN 5265. Intermediate Finite Element Method. 3 cr. hrs.
Introduces the finite element solution method for linear, static problems. Includes calculation of element stiffness matrices, assembly of global stiffness matrices, exposure to various finite element solution methods, and numerical integration. Emphasizes structural mechanics, and also discusses heat transfer and fluid mechanics applications in finite element analysis. Computer assignments include development of finite element code (FORTRAN or C) and also use of commercial finite element software (ANSYS and/or MARC). Prereq: MEEN 3260 or equiv.

MEEN 5270. Physical Systems Modeling. 3 cr. hrs.

MEEN 5275. Mechatronics. 3 cr. hrs.
Mechatronics, as an engineering discipline, is the synergistic combination of mechanical engineering, electronics, control engineering, and computer science, all integrated through the design process. This course covers mechatronic system design, modeling and analysis of dynamic systems, control sensors and actuators, analog and digital control electronics, interfacing sensors and actuators to a microcomputer/microcontroller, discrete and continuous controller design, and real-time programming for control.

MEEN 5310. Combustion: Thermochemistry, Kinetics and Applications. 3 cr. hrs.
Fundamentals of combustion and chemical kinetics, with applications to engines and combustion devices. Study of fluid flow, thermodynamics, combustion, heat transfer and friction phenomena, and fuel properties relevant to engine power, efficiency and emissions. Examination of spark-ignition, diesel, stratified charge, HCCI, mixed-cycle and gas turbine engines.

MEEN 5325. Intermediate Fluid Mechanics. 3 cr. hrs.
Intermediate Fluid Mechanics continues to develop fluid mechanic concepts, building on a working knowledge of the Reynolds Transport Theorem. Topics include: differential analysis, irrotational flow theory, boundary layer theory and compressible flow theory. Both laminar and turbulent flows are discussed. Some working knowledge of computer programming is necessary.

MEEN 5330. Optics, Lasers and Spectroscopy in Engineering. 3 cr. hrs.
Topical overview on the uses of optics, lasers, and spectroscopic measurement techniques in engineering and scientific disciplines. Technical content includes basic principles of geometric optics, principles behind and characteristics of laser operation, and linear spectroscopy. Emphasis on absorption and emission techniques for sensor development.

MEEN 5350. Transport Phenomena. 3 cr. hrs.
Includes three closely related topics: fluid dynamics, mass transfer, and heat transfer. Fluid dynamics involves the transport of momentum, mass transfer is concerned with the transport of mass of various chemical species, and heat transfer deals with the transport of energy. In practice, rarely are these phenomena acting alone. Develops a more cohesive understanding of these interrelated processes.

MEEN 5360. Intermediate Thermodynamics. 3 cr. hrs.
Covers fundamentals of thermodynamics, including classical and statistical approaches with application to equilibrium and non-equilibrium, non-reactive and reactive systems. May cover topics relevant to micro/nanoscale and biological systems.

MEEN 5410. Experimental Design. 3 cr. hrs.
Application of statistical concepts to design engineering experiments to improve quality, production techniques, and reliability. Use and advantages of various models; factorial, fractional factorial, orthogonal arrays and fractional designs.

MEEN 5420. Failure Analysis. 3 cr. hrs.
Methodology of failure analysis. Studies of brittle fracture, ductile fracture, fatigue, stress corrosion and electro-chemical corrosion as applied to the failure of metals. Involves some laboratory work and analyses of a variety of metallurgical failures.

MEEN 5430. Powder Metallurgy. 3 cr. hrs.
Introduces a modern technology with growing importance. Covers the basics of powder metallurgy with main emphasis on sintered steel. The primary topics covered are powder production, die compacting, sintering theory and practice, full density processing, properties under static and dynamic loading conditions.

MEEN 5440. Processing and Forming of Materials. 3 cr. hrs.
Solidification and microstructural development in metal casting with an overview of selected melting processes. Overview of primary and secondary working principles involved in ferrous materials processing. Stress based and finite element analyses are applied to both sheet and bulk forming to develop a fundamental understanding of deformation processing principles and technology associated with processes such as drawing, open and closed die forging and rolling.

MEEN 5450. Mechanical Behavior of Materials. 3 cr. hrs.

MEEN 5460. Work Measurement and Facilities Design. 3 cr. hrs.
Concentrates on how to quantitate work and how to design work tasks, based on measurement and methods engineering, to achieve optimal performance. Involves analysis and evaluation of facilities for industrial and service operations and designing facilities, regardless of size, for various types of operations.
Overview of computer integrated production systems, which include computer numerical control, industrial robotics, material transport and storage systems, automated production lines, flexible manufacturing systems, quality control systems, CAD/CAM, production planning and control, just-in-time and lean manufacturing.

MEEN 5475. Ergonomics. 3 cr. hrs.
Ergonomics maximizes the health and safety of workers, while maintaining productivity and quality. Covers biomechanical and physiologic aspects of workplace design, such as engineering anthropometry, cumulative trauma disorders, (including carpal tunnel syndrome), low back injuries, hand tool design and evaluation, methods of surveillance in industrial environments, modeling, and ergonomics guidelines. Laboratory experiences are offered to demonstrate ergonomic principles and also provide students with hands-on experience in collecting data and conducting experiments.

MEEN 5485. Welding Engineering. 3 cr. hrs.
Arc welding physics, fundamentals of power supplies and welding circuits, fusion and solid-state welding processes, weld testing, analysis of welded joints, demonstrations using various processes.

MEEN 5570. Biomaterials Science and Engineering. 3 cr. hrs.
Designed to introduce the uses of materials in the human body for the purposes of healing, correcting deformities and restoring lost function. The science aspect of the course encompasses topics including: characterization of material properties, biocompatibility and past and current uses of materials for novel devices that are both biocompatible and functional for the life of the implanted device. Projects allow students to focus and gain knowledge in an area of biomaterials engineering in which they are interested. Same as BIEN 4420.

MEEN 5931. Topics in Mechanical Engineering. 3 cr. hrs.
Topics may include energy conversion, mechanical analysis and design, and manufacturing systems.

MEEN 6101. Advanced Engineering Analysis 1. 3 cr. hrs.

MEEN 6102. Advanced Engineering Analysis 2. 3 cr. hrs.

MEEN 6103. Approximate Methods in Engineering Analysis. 3 cr. hrs.
Treatment of approximate methods for solving various problems in engineering. Matrix methods, variational methods (e.g., Ritz, Galerkin, etc.), finite difference methods, finite element method.

MEEN 6220. Advanced Dynamics. 3 cr. hrs.
Kinematics of particles and rigid bodies. Basic principles of vector mechanics. Variational principles. Basic principles of analytical mechanics. Prereq: MEEN 4220/5220 or equiv.

MEEN 6225. Advanced Vibrations. 3 cr. hrs.
Theory of vibration with applications. Natural modes of vibration for lumped parameter systems. Response of lumped systems with damping. Response of distributed parameter system including bars, beams, etc.

MEEN 6230. Advanced Mechanics of Materials. 3 cr. hrs.
Thick wall cylinders, rotating disks, initial stresses; stress concentration factors, cracks, discontinuity stresses; autofrettage, residual stresses; beams on elastic foundation, introduction to plates and shells, pressure vessel analysis. Prereq: MEEN 5230; or MEEN 5250.

MEEN 6240. Composite Materials. 3 cr. hrs.
Introduction to fiber/matrix materials systems with emphasis on continuous fiber-reinforced composites. Principles of anisotropic elasticity, classical lamination theory, and viscoelasticity. Analysis of mechanical, thermal, hygroscopic and combination loading of laminated composites. Review of manufacture/fabrication methods for advanced composites, consolidation techniques, and basic issues in the design of advanced composites. Prereq: MEEN 5240; or cons. of instr.

MEEN 6250. Industrial Robotics. 3 cr. hrs.
Fundamentals of industrial robotic systems. Covers serial and parallel manipulators, forward and inverse kinematics, differential kinematics, multi-rigid-body dynamics, trajectory planning, linear control theory, actuators and sensors, mechanism design and vision systems.

MEEN 6260. Multiscale Material Modeling. 3 cr. hrs.
Numerical and analytical techniques for modeling the micromechanics and micro-structural evolution of complex heterogeneous materials (including granular, composite, and atomic/molecular materials); techniques for transferring information between local (micro-scale) and global (macro-scale) representations of multi-scale materials. Prereq: MEEN 3260 or equiv., and MEEN 4260 or MEEN 5260 or equiv.

MEEN 6310. Advanced Fluid Mechanics. 3 cr. hrs.
Further development of fluid flow theory starting with classic potential flow solutions. Numerical and analytical techniques for both inviscid and viscous fluid flows, including boundary layer theory and stability. Transition routes and chaos with an introduction to turbulence. Prereq: MEEN 5325 or MEEN 5350 or equiv.; computer programming experience recommended.
MEEN 6320. Turbulence. 3 cr. hrs.
Advanced physical and mathematical description of fluid flow systems, including the fundamentals of turbulence motion. The development of the Reynolds stress equations, processes that govern dissipation and statistical description of scales. Includes the modeling techniques associated with turbulent velocity profiles as well as the development of zero, one and two equation closure models. Prereq: MEEN 5350 or equiv.; computer programming experience recommended.

MEEN 6330. Statistical Thermodynamics. 3 cr. hrs.

MEEN 6340. Thermal Radiation Heat Transfer. 3 cr. hrs.

MEEN 6345. Multicomponent Mass Transfer. 3 cr. hrs.
Fundamentals of Multicomponent Mass Transfer, including Maxwell-Stefan diffusion, Generalized Fick's Law, ideal and non-ideal mixtures, interphase mass transfer and film theory and multicomponent mass transfer in porous media.

MEEN 6350. Convective Heat and Mass Transfer. 3 cr. hrs.
Principles and mechanisms of convective transports of energy and of chemical species associated with laminar and turbulent flows, including condensation and boiling. Calculation of heat and mass transport coefficients. Mathematical modeling, with applications to engineering devices involving several of these processes, with and without phenomenological coupling. Prereq: MEEN 6310.

MEEN 6360. Computational Fluid Mechanics. 3 cr. hrs.
Review of the fundamental thermofluids science, mathematical and computational principles underlying modern CFD software. Utilization of software for representative applications. Individual student project devoted to a new application. Prereq: MEEN 6101 and MEEN 6320; or cons. of instr.

MEEN 6370. Combustion Chemistry and Mechanisms. 3 cr. hrs.
Advanced theoretical, experimental and numerical techniques for studying the chemistry and kinetic mechanisms of combustion. The technical content for includes theories of gas phase chemical kinetics, a discussion of experimental and theoretical techniques for evaluating kinetic rate coefficients, and strategies for the development and reduction of kinetic mechanisms intended for modeling combustion reactions. Topics relevant to statistical thermodynamics and the physical dynamics of technical flames may be covered. Prereq: MEEN 4310 or MEEN 5310 or equiv.

MEEN 6375. Turbulent Combustion. 3 cr. hrs.

MEEN 6470. Statistical Methods in Engineering. 3 cr. hrs.

MEEN 6473. Computer Integrated Manufacturing. 3 cr. hrs.
Primary objectives include the validation of the underlying philosophy behind computer integrated manufacturing and the definition of characteristics of various components which constitute a C.I.M. environment. Describes the benefits of C.I.M. and how to upgrade conventional plants to a C.I.M. operation.

MEEN 6475. Advanced Ergonomics/Human Factors Engineering. 3 cr. hrs.
Fundamentals of ergonomics/human factors engineering (HFE) with emphasis on the application of basic principles to advances in engineering applications, research, and development. Topics include: engineering anthropometry, cumulative trauma disorders, low back disorders, electromyography, biomechanical modeling, and ergonomic guidelines. Requires research papers in the above areas or in a related ergonomics/HFE field. Prereq: Cons. of instr.

MEEN 6480. Metal Forming. 3 cr. hrs.
Elements of von Mises plasticity theory-stress and deformation states, constitutive equations, and flow rules; plane and axisymmetric behavior. Solution techniques - exact, slipline theory, upper and lower bounds, finite bending, deep drawing. Prereq: MEEN 5440 or equiv.; or cons. of instr.

MEEN 6910. Topics in Mechanical Engineering. 3 cr. hrs.
Topics may include thermofluid science, mechanical analysis and design, and manufacturing systems.

MEEN 6960. Seminar in Mechanical Engineering. 0 cr. hrs.
Scholarly presentations on current topics in mechanical engineering and related areas by visiting and resident investigators. Required of all full-time graduate students. SNC/UNC grade assessment.

MEEN 6995. Independent Study in Mechanical Engineering. 1-3 cr. hrs.
Prereq: Cons. of instr. and cons. of dept. ch.

MEEN 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.
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<th>Prerequisite</th>
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<td>S/U</td>
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<td>MEEN 9970</td>
<td>Graduate Standing Continuation: Less than Half-Time</td>
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<td>MEEN 9974</td>
<td>Graduate Fellowship: Full-Time</td>
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<td>MEEN 9975</td>
<td>Graduate Assistant Teaching: Full-Time</td>
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<td>Fee. SNC/UNC grade assessment</td>
<td>Prereq: Cons. of dept. ch.</td>
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<td>MEEN 9976</td>
<td>Graduate Assistant Research: Full-Time</td>
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<td>MEEN 9984</td>
<td>Master's Comprehensive Examination Preparation: Less than Half-Time</td>
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<td>MEEN 9985</td>
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<td>MEEN 9986</td>
<td>Master's Comprehensive Examination Preparation: Full-Time</td>
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<td>MEEN 9987</td>
<td>Doctoral Comprehensive Examination Preparation: Less than Half-Time</td>
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<td>MEEN 9989</td>
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<td>MEEN 9995</td>
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<td>MEEN 9996</td>
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<td>MEEN 9997</td>
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<td>Fee. SNC/UNC grade assessment</td>
<td>Prereq: Cons. of dept. ch.</td>
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<td>MEEN 9999</td>
<td>Doctoral Dissertation Continuation: Full-Time</td>
<td>0</td>
<td>Fee. SNC/UNC grade assessment</td>
<td>Prereq: Cons. of dept. ch.</td>
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</table>
Graduate Certificates

Executive Director: Jeffrey Starke, Ph.D.
Master's Across Boundaries Certificates Programs webpage (https://www.marquette.edu/engineering/graduate-degrees.php#Certificate)

Certificates OFFERED

Environmental Engineering (ENEN), Essential Skills for Practicing Engineers (ESPE), Machine Learning for Engineering Applications (MLRN), Renewable Energy Technology and Integration (RETI), Systems Engineering (SYEN)

PREREQUISITES FOR ADMISSION

A baccalaureate degree in an appropriate area with a minimum grade point average of 3.000 is required. Applicants who do not have an engineering degree must complete prerequisite engineering requirements. The list of prerequisites is completed during the advising process.

Students who do not meet the 3.000 requirement, but have completed one year of engineering work experience, are reviewed and considered by the associate dean of engineering for academic affairs and the executive director of the Masters Across Boundaries program for admission. This is based upon a letter of recommendation by their supervisor to determine the applicant’s ability to complete advanced course work.

APPLICATION REQUIREMENTS

Applicants must submit, directly to the Marquette University Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).

2. Copies of all college/university transcripts except Marquette.

3. Application letter, describing the reasons for pursuing an advanced degree and career goals.

4. (For students not meeting the GPA requirements) a recommendation letter from a work supervisor (engineer) or a former professor. These letters should directly address the applicant’s suitability for completing graduate-level course work.

5. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

1 Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

Faculty Sponsor: Brooke Mayer, Ph.D.

Environmental Engineering

The certificate in environmental engineering (ENEN) is a 12-credit certificate designed to allow environmental, civil, chemical, industrial, mechanical engineers or other related degree the ability to develop technical depth within their specific area of interest. This flexible program of study allows engineers to focus in specific areas such as water resources, water/wastewater treatment, air pollution control and modeling, or industrial resource and waste management that are commonly performed by environmental engineers. The certificate program allows engineers to expand their depth of knowledge within the environmental engineering subdivision as recognized by the American Society of Civil Engineers (ASCE) and the American Academy of Environmental Engineers (AAEE).

The 12 credits of course work are proposed by a student in consultation with the academic adviser. All certificate programs must meet the requirements in the Graduate School Bulletin, including any course prerequisite requirements. Any deviations from the approved courses in the Graduate School Bulletin or course substitutions must be approved by the certificate faculty sponsor, the CIEN director of graduate studies (DGS) and the chair of the CCEE Department. This certificate is designed for practicing professionals.

Course Options:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>CEEN 5230</td>
<td>Urban Hydrology and Stormwater Management</td>
<td>3</td>
</tr>
<tr>
<td>CEEN 5310</td>
<td>Geographical Information Systems in Engineering and Planning</td>
<td>3</td>
</tr>
<tr>
<td>CEEN 5320</td>
<td>Engineering Decisions Under Uncertainty</td>
<td>3</td>
</tr>
<tr>
<td>CEEN 5340</td>
<td>Urban Planning for Civil Engineers</td>
<td>3</td>
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<tr>
<td>CEEN 5350</td>
<td>Law for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>CEEN 5505</td>
<td>Air Quality Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CEEN 5515</td>
<td>Environmental Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CEEN 5520</td>
<td>Industrial Wastewater Management</td>
<td>3</td>
</tr>
</tbody>
</table>
CEEN 5525  Treatment Plant Design and Operation  3
CEEN 5530  Hazardous and Industrial Waste Management  3
CEEN 5535  Environmental Engineering Microbiology  3
CEEN 5550  Water Resources Planning and Management  3
CEEN 5560  Environmental Fate and Transport  3
CEEN 5715  Sustainable Engineering  3
CEEN 5931  Topics in Civil Engineering  1-3
CEEN 6210  River Engineering  3
CEEN 6240  Water Quality Modeling and Management  3
CEEN 6340  Advanced Hydrology  3
CEEN 6350  Modeling in Water Resources Engineering  3
CEEN 6510  Biochemical Transformations in the Environment  3
CEEN 6520  Environmental Laboratory 1 - Analyses  3
    or CEEN 6521  Environmental Laboratory 2 - Processes  3
CEEN 6530  Hazardous Waste Remediation Technologies  3
CEEN 6540  Physical and Chemical Processes of Environmental Engineering  3
CEEN 6560  Fate of Micropollutants  3
CEEN 6860  GIS Applications in Water Resources Engineering  3
CEEN 6865  Biotechnology - Microbial Communities  3
CEEN 6932  Advanced Topics in Civil Engineering  1-3
GEEN 5810  Industrial Ecology and Sustainable Design  3

1  Specific topic must be preapproved.

Faculty Sponsors: Jeffrey Starke, Ph.D. and Kate Trevey, M.Ed.

Essential Skills for Practicing Engineers

This flexible, interdisciplinary graduate certificate is intended to (1) explore and refine individual leadership skills, (2) expand the mindset of engineers to integrate cross-functional perspectives in decision making and (3) enable technical data synthesis and communication skills to create clear and concise deliverables that expedite decisions. The certificate includes curriculum across cross-functional partners including finance, supply chain, legal and communication skills and strategies for engineering leadership. Elective courses allow the students to integrate Marquette University’s Jesuit values in ethical business practice and corporate and social responsibility.

The certificate in essential skills requires a total of 12 credit hours. The 12 credits of course work are proposed by a student in consultation with the program director or academic adviser. All certificate programs meet the requirements in the Graduate School Bulletin, including any course prerequisite requirements. Any deviations from the approved courses in the Graduate School Bulletin or course substitutions must be approved by the Certificate Faculty Sponsor, the executive director of Master’s Across Boundaries program, and the associate dean for academic affairs in the Opus College of Engineering. This certificate is designed for practicing professionals. As such, it is anticipated that only the part-time option is likely to be pursued.

Required Course:

GEEN 6700  Leadership Essentials: The Mindset and Skillset of a Leader  2

Elective Courses:

10

Elective Course in College of Communication - choose one, 3-credit course from the following:
CMST 5140  Intergenerational Communication
CMST 5230  Managerial Communication
CMST 5250  Leadership and Communication
COMM 5330  Health, Science and Environmental Communication
COMM 6825  Digital Communication Strategies for Leadership
COMM 6953  Proseminar in Health, Science and Environment

Elective Course in College of Business Administration/Graduate School of Management - choose one, 3-credit course from the following:
BUAD 6000  Accounting and Finance for the Non-Financial Manager
MBA 6020  Business Essentials: Accounting, Economics and Finance
MBA 6110  Strategic Management Introduction
MBA 6120  Concepts for Ethical Business Practice
MBA 6130  Corporate Social Responsibility
MBA 6200  Enterprise Risk Management
OSCM 6931  Topics in Operations and Supply Chain Management (Supply Chain Strategy and Practice)

Approved SCMM courses from online offerings.

Other courses as approved by the Certificate Faculty Sponsor, the executive director of MAB program and the associate dean for academic affairs in the Opus College of Engineering.

Other elective course options:
- COSC 5500  Visual Analytics
- LAW 7141  Copyrights
- LAW 7187  Environmental Law
- LAW 7232  Intellectual Property Law
- LAW 7261  Land Use Planning
- LAW 7302  Products Liability
- LAW 7342  Water Law
- LAW 7408  Seminar: Bioethics and the Law
- LAW 7732  Workshop: Energy Law

An additional course not already taken from the above COMM or COBA/GSM course lists.

Total Credit Hours 12

Faculty Sponsor: Richard Povinelli, Ph.D.

Machine Learning for Engineering Applications

The graduate certificate in machine learning is intended to develop the capabilities required to apply current tools and approaches to solve complex machine learning problems in a variety of application domains. The certificate offers students the opportunity to achieve a greater technical understanding of the elements of machine learning, which includes algorithms, intelligent systems, neural networks, pattern recognition and deep learning. In addition, students understand the possibilities and limitations of machine learning for a variety of industry applications such as image processing, medical diagnostics, wastewater treatment, cyber defense and machine finishing.

The certificate in machine learning requires four courses for a total of 12 credit hours. The 12 credits of course work are proposed by a student in consultation with the program director or academic adviser. All certificate programs meet the requirements in the Graduate School Bulletin, including any course prerequisite requirements. Any deviations from the approved courses in the Graduate School Bulletin or course substitutions must be approved by the Certificate Faculty Sponsor, the EECE director of graduate studies (DGS), and the chair of the EECE department. This certificate is designed for practicing professionals. As such, it is anticipated that only the part-time option is likely to be pursued.

Required Course:
- EECE 6822  Machine Learning 3

Elective courses - choose three from the following: 9
- COSC 5500  Visual Analytics
- COSC 5610  Data Mining
- COSC 5820  Ethical and Social Implications of Data
- COSC 6330  Advanced Machine Learning
- COSC 6570  Data at Scale
- EECE 5650  Introduction to Algorithms
- EECE 5690  Developments in Computer Software
  or COSC 5600  Fundamentals of Artificial Intelligence
- EECE 5850  Introduction to Intelligent Systems
- EECE 5860  Introduction to Neural Networks and Fuzzy Systems
- EECE 5870  Evolutionary Computation
- EECE 6810  Algorithm Analysis and Applications
- EECE 6820  Artificial Intelligence
- EECE 6830  Pattern Recognition
- EECE 6840  Neural Networks and Neural Computing
- EECE 6932  Advanced Topics in Electrical and Computer Engineering
Renewable Energy Technology and Integration

The graduate certificate in renewable energy technology and integration is intended to develop the capabilities required to solve complex energy problems. As energy sources transition to lower carbon emitting technologies, there is a growing need for engineering professionals to manage the transition and drive improvements in efficiency, cost, resource capture (wind, solar), sustainable materials and manufacturing. Investments in renewable energy resources will continue to transition to more clean and secure energy technologies.

For renewable energy integration, a grand challenge identified by the National Renewable Energy Laboratory (NREL) is to design and operate renewable energy plants to provide the required grid resources (frequency control, ramping, voltage regulation). Connecting the renewable energy generation to the end use is essential for innovative controls to optimize energy output and capture. The certificate electives provide the technical rigor to develop engineering solutions to these industry challenges.

The certificate in renewable energy requires four courses for a total of 12 credit hours. The 12 credits of course work are proposed by a student in consultation with the program director or academic adviser. All certificate programs meet the requirements in the Graduate School Bulletin, including any course prerequisite requirements. Any deviations from the approved courses in the Graduate School Bulletin or course substitutions must be approved by the Certificate Faculty Sponsor, the EECE director of graduate studies (DGS) and the chair of the EECE department. This certificate is designed for practicing professionals. As such, it is anticipated that only the part-time option is likely to be pursued.

Required Courses:
- EECE 5290 Developments in Energy and Power (Sustainable Energy Conversion) 3
- EECE 6931 Topics in Electrical and Computer Engineering (Renewable Energy: Policy, Technology, Sustainability) 3

Elective Courses - choose two from the following:
- EECE 5210 Design and Analysis of Electric Motor-Drive Systems
- EECE 5220 Power Electronics for Renewable Energy Systems
- EECE 5240 Protection and Monitoring of Electric Energy Systems
- EECE 5250 Transients in Electric Energy Systems and Devices
- EECE 6932 Advanced Topics in Electrical and Computer Engineering (Microgrids)
- EECE 6932 Advanced Topics in Electrical and Computer Engineering (Electric Machine Design)

Other courses as approved by the Certificate Faculty Sponsor, the EECE director of graduate studies (DGS) and the chair of the EECE department.

Systems Engineering

The graduate certificate in systems engineering is intended to develop the capabilities required to apply current tools and approaches to solve complex systems engineering problems in a variety of application domains. Students are able to apply mathematical and scientific principles to the interdisciplinary engineering design, development and operation of systems that efficiently satisfy stakeholder needs, fulfill the intended operation and have a long and useful operating life. In this integrative and leadership role, systems engineers find success by being able to leverage their technical expertise and experiences while integrating multiple disciplinary perspectives, assessing and managing risks, and inspiring and guiding valuable solutions.

The certificate in systems engineering requires four courses for a total of 12 credit hours. The 12 credits of course work are proposed by a student in consultation with the program director or academic adviser. All certificate programs meet the requirements in the Graduate School Bulletin, including any course prerequisite requirements. Any deviations from the approved courses in the Graduate School Bulletin or course substitutions must be approved by the Certificate Faculty Sponsor and the associate dean for academic affairs in the Opus College of Engineering. This certificate is designed for practicing professionals. As such, it is anticipated that only the part-time option is likely to be pursued.

Required Courses:
- GEEN 5820 Systems Engineering Principles and Practice 3
- GEEN 5830 Engineering Risk Analysis 3

Elective Courses - Choose two from the following:
- BIEN 5320 Biomedical Instrumentation Design
- BIEN 5510 Image Processing for the Biomedical Sciences
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIEN 5700</td>
<td>Systems Physiology</td>
</tr>
<tr>
<td>CEEN 5320</td>
<td>Engineering Decisions Under Uncertainty</td>
</tr>
<tr>
<td>CEEN 5640</td>
<td>Traffic Characteristics and Design</td>
</tr>
<tr>
<td>CEEN 5715</td>
<td>Sustainable Engineering</td>
</tr>
<tr>
<td>COSC 5360</td>
<td>Computer Security</td>
</tr>
<tr>
<td>COSC 5600</td>
<td>Fundamentals of Artificial Intelligence</td>
</tr>
<tr>
<td>EECE 5460</td>
<td>Sensor Devices: Theory, Design, and Applications</td>
</tr>
<tr>
<td>EECE 5630</td>
<td>Software Testing</td>
</tr>
<tr>
<td>EECE 5650</td>
<td>Introduction to Algorithms</td>
</tr>
<tr>
<td>EECE 5850</td>
<td>Introduction to Intelligent Systems</td>
</tr>
<tr>
<td>GEEN 5810</td>
<td>Industrial Ecology and Sustainable Design</td>
</tr>
<tr>
<td>GEEN 5840</td>
<td>Model-Based Systems Engineering</td>
</tr>
<tr>
<td>MEEN 5270</td>
<td>Physical Systems Modeling</td>
</tr>
<tr>
<td>MEEN 5410</td>
<td>Experimental Design</td>
</tr>
<tr>
<td>PSYC 5330</td>
<td>Human Factors Engineering</td>
</tr>
<tr>
<td>Other courses as approved by the Certificate Faculty Sponsor and the associate dean for academic affairs in the Opus College of Engineering.</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hours**: 12

**Courses**

**GEEN 5810. Industrial Ecology and Sustainable Design. 3 cr. hrs.**
Introduces students to the emerging sustainability challenges and impacts on industry and engineering design. Analyzes corporate frameworks to identify and prioritize sustainability initiatives that add business value. Learn tools to characterize sustainability aspects of design and apply the tools in multi-disciplinary case studies to generate recommendations. Integrates essential communication skills to present case study results to various stakeholders.

**GEEN 5820. Systems Engineering Principles and Practice. 3 cr. hrs.**
Introduces fundamental systems engineering principles and practices for the development of complex systems throughout the system life cycle: from concept development to engineering development, production, operation and support. Specific topics include needs analysis, concept exploration, concept definition, engineering design, integration and evaluation, production and operation and support. In addition, essential systems engineering methods and tools such as trade-off analysis, risk management, and modeling and simulation are covered.

**GEEN 5830. Engineering Risk Analysis. 3 cr. hrs.**
Introduces key techniques and tools used to establish system design decisions – amid uncertainty – from a risk analysis perspective. Evaluates a holistic view of sources, consequences and mitigation of risks. Important emergent properties that result from effective system risk analysis, such as safety and resilience, are discussed.

**GEEN 5840. Model-Based Systems Engineering. 3 cr. hrs.**
Develops experience in the application of model-based systems engineering (MBSE) tools and methodologies to define, analyze and design a complex system. Students will incrementally build and analyze a system model that consists of the following perspectives/levels: operational need, system need, logical architecture and physical architecture. Prereq: GEEN 5830.

**GEEN 6700. Leadership Essentials: The Mindset and Skillset of a Leader. 2 cr. hrs.**
Develops a foundational experience in leadership by exploring the interconnectedness of understanding oneself with the application of leading with others in the technical professions. Blends the theory and application of a wide range of topics to include foundational theories in leadership; emotional and social intelligence; group norms, behaviors, and effective teams; inclusion, diversity, and difficult conversations; culture and ethics; and future considerations for engineering disciplines. Students apply course topics in simulations, role-playing, case studies, and team problem-solving vignettes.
English (ENGL)

Chairperson: Leah Flack, Ph.D.
Department of English website (https://www.marquette.edu/english/)

Degrees Offered
Master of Arts; Doctor of Philosophy

Program Descriptions
The master of arts program in English (https://www.marquette.edu/grad/programs-masters-english.php) provides broad coverage in British, American and other Anglophone literatures. Through seminar courses, students develop extensive knowledge of literature, literary critical methods and analytical writing. Students who complete the master’s program at Marquette go on to doctoral studies or pursue careers in education, nonprofit administration, library sciences, law, health care, communications, journalism and other professions. Admitted master’s students are eligible for Marquette’s standard tuition discount for humanities graduate degrees.

The doctorate in English (https://www.marquette.edu/grad/programs-phd-english.php) allows students to develop a comprehensive and intensive knowledge of British, American and/or other Anglophone literatures; to apply literary theory; to write for both scholarly and general readers; and to engage in research. Students who complete the doctoral program at Marquette are prepared to work in higher education and are also equipped to apply their skills in a variety of other workplaces. Teaching assistantships are available on a competitive basis.

Prerequisites for Admission
Applicants to the master's program are expected to have adequate preparation in English and related subjects. A minimum of 18 credit hours in English at the undergraduate level are required. A master of arts degree is required for admission to the doctoral program.

Application Deadline
For full consideration for fall admission and financial aid, all application files must be complete by January 15. After that date, applications are evaluated on a rolling basis until available slots have been filled.

Application Requirements
Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. Two letters of recommendation required, three preferred.
5. One or two writing samples.
6. (For doctoral applicants only) GRE scores (General Test only).
7. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

English Master’s Requirements

Specialization: British, American and other Anglophone Literatures

The master of arts program in English offers a rigorous, personalized, project-based postgraduate experience that prepares students to achieve their professional and personal goals. Students have the freedom to pursue their particular interests in literary studies in a way that prepares them for an array of future plans, including admission to a doctoral program in English; admission to graduate programs in a range of disciplines, including law, library sciences, education or business; or preparation for careers in the non-profit and for-profit sectors. Under the guidance of a faculty mentor, students design a program of study that may include traditional course work, internships and a culminating project.
MASTER of Arts CURRICULUM

PLAN A REQUIREMENTS
Plan A requires 30 credit hours beyond the bachelor's degree, including 24 credit hours of course work, which consists of a combination of courses at the 5000 level and up suited to each student's interests and goals, plus 6 credit hours of a master's thesis. The thesis must be approved by the thesis director and one other reader, usually the director of graduate studies.

Required course work:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 6820</td>
<td>Studies in Modern Critical Theory and Practice</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 8282</td>
<td>Advanced Studies in Modern Critical Theory and Practice</td>
<td></td>
</tr>
</tbody>
</table>

Electives chosen from 5000 level ENGL courses (maximum of 15 credits) and any of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 6210</td>
<td>Literature to 1500</td>
<td></td>
</tr>
<tr>
<td>ENGL 6215</td>
<td>16th and 17th Century Literatures</td>
<td></td>
</tr>
<tr>
<td>ENGL 6220</td>
<td>Studies in Shakespeare</td>
<td></td>
</tr>
<tr>
<td>ENGL 6300</td>
<td>The Long 18th Century</td>
<td></td>
</tr>
<tr>
<td>ENGL 6400</td>
<td>Studies in Nineteenth-Century British Literature</td>
<td></td>
</tr>
<tr>
<td>ENGL 6500</td>
<td>Studies in Twentieth-Century British Literature</td>
<td></td>
</tr>
<tr>
<td>ENGL 6600</td>
<td>Studies in American Literature from the Beginnings to 1900</td>
<td></td>
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<tr>
<td>ENGL 6700</td>
<td>Studies in Twentieth-Century American Literature</td>
<td></td>
</tr>
<tr>
<td>ENGL 6710</td>
<td>21st Century Literatures</td>
<td></td>
</tr>
<tr>
<td>ENGL 6720</td>
<td>Studies in Transatlantic Literatures</td>
<td></td>
</tr>
<tr>
<td>ENGL 6730</td>
<td>Studies in Transnational Literatures</td>
<td></td>
</tr>
<tr>
<td>ENGL 6800</td>
<td>Studies in Genre</td>
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</tr>
<tr>
<td>ENGL 6810</td>
<td>Study in History of Literary Criticism</td>
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<td>Studies in Modern Critical Theory and Practice</td>
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<tr>
<td>ENGL 6830</td>
<td>Studies in Literary Criticism</td>
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<tr>
<td>ENGL 6931</td>
<td>Topics in English</td>
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</tbody>
</table>

One graduate-level (cognate) course from outside ENGL

<table>
<thead>
<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ENGL 6840</td>
<td>Studies in Rhetoric and Composition Theory</td>
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</tr>
<tr>
<td>ENGL 6999</td>
<td>Master's Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>

Total Credit Hours 30

1 Consent required from the director of graduate studies.
2 Consent required from the director of graduate studies and recommended for those students who may be considering pursuing a Ph.D. degree.

PLAN B REQUIREMENTS
Plan B requires 30 credit hours beyond the bachelor's degree and will consist of courses at the 5000 level and above suited to each student's interests and goals.

Required course work:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>or ENGL 8282</td>
<td>Advanced Studies in Modern Critical Theory and Practice</td>
<td></td>
</tr>
</tbody>
</table>

Electives chosen from 5000-level ENGL courses (maximum of 15 credits) and any of the following:

<table>
<thead>
<tr>
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<th>Credits</th>
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</thead>
<tbody>
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</tbody>
</table>
ENGL 6800  Studies in Genre
ENGL 6810  Study in History of Literary Criticism
ENGL 6820  Studies in Modern Critical Theory and Practice
ENGL 6830  Studies in Literary Criticism
ENGL 6931  Topics in English
Up to two graduate-level (cognate) courses from outside ENGL ¹
ENGL 6840  Studies in Rhetoric and Composition Theory ²
ENGL 6995  Independent Study in English ³
ENGL 6998  Professional Project in English ³

Total Credit Hours 30

¹ Consent required from the director of graduate studies.
² Consent required from the director of graduate studies and recommended for those students who may be considering pursuing a Ph.D. degree.
³ A culminating project to be developed in consultation with the director of graduate studies and an assigned faculty mentor.

ACCELERATED DEGREE PROGRAM

The accelerated degree program in English is designed to allow students to earn a bachelor of arts degree and a master of arts degree in English in five years rather than the six years normally required to earn both degrees. Undergraduates participating in this program are granted early admission to the Graduate School and are allowed to take up to 12 credit hours of graduate-level courses during their senior year.

The accelerated degree program prepares students for the next stage of their careers. Students who complete a master of arts in English have gone on to gain admission to excellent doctoral programs, medical schools, and law schools and several have gone on to pursue an advanced degree in library and information studies. Our alumni have also applied their critical reading, thinking, and writing skills in a variety of private sector positions. Students in the accelerated degree program benefit from the smaller class sizes and intellectual rigor of graduate courses in their senior year and from working with an adviser to construct a program of study and a thesis project targeted to their specific intellectual and professional goals.

Students in the accelerated degree program work closely with the director of graduate studies and a departmental adviser to construct a personalized program meant to help them to fulfill their personal and professional goals. In their fourth year, students take four classes that count toward both their undergraduate and graduate degrees. In their fifth year, students take six courses to complete the master's degree. In this final year, students may elect to write a master's thesis, complete an internship, or do a professional project, though these are not required.

The accelerated degree program in English is not restricted to undergraduate English majors. To apply for admission to the accelerated degree program, students should have completed four English courses beyond ENGL 1001 Foundations in Rhetoric and maintained a 3.000 cumulative GPA. For additional information about requirements, interested students should contact the English department.

English Doctoral Requirements

Specializations: American Literature, British Literature

The doctorate in English is directed toward comprehensive and intensive knowledge of literature; the textual, critical and editorial problems and backgrounds of major texts and authors; the principles of literary criticism; and the basic tools, methods and application of literary and linguistic research. The program provides practical experience in teaching and research to prepare students to pursue a variety of careers in higher education.

DOCTORAL CURRICULUM

Doctoral students must show competence in a second language in which there is significant scholarly literature in their program of study. The choice of language must be approved by the director of graduate studies. Students must complete all requirements listed on the Doctoral Program Planning Form, pass a qualifying examination and successfully defend a dissertation to complete the program.

Doctoral requirements (Master's degree in English Completed)

Students must complete a minimum of 36 credit hours after completing a master of arts degree in English: 24 credit hours of course work, 12 of which may be taken at the 5000 level with the permission of the director of graduate studies; and 12 credit hours of ENGL 8999 Doctoral Dissertation to be taken after successful completion of ENGL 8830 Dissertation Tutorial.

Required course work:

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
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<td>3</td>
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<tr>
<td>or ENGL 8282</td>
<td>Advanced Studies in Modern Critical Theory and Practice</td>
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</tr>
<tr>
<td>ENGL 6965</td>
<td>Practicum in Teaching Writing</td>
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<tr>
<td>Electives: Choose 5 from the following courses:</td>
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<tr>
<td>ENGL 6210</td>
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</tr>
<tr>
<td>Course</td>
<td>Title</td>
<td></td>
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**Dissertation-related credits**

- ENGL 8830 Dissertation Tutorial 3
- ENGL 8999 Doctoral Dissertation 12
- Total Credit Hours 36

¹ A project developed in consultation with the director of graduate studies and an assigned faculty mentor (3 credits maximum).
² Consent required from the director of graduate studies.

**Doctoral requirements (master's degree in English not completed)**

Students are eligible to earn a master's degree after they complete 30 credit hours of this program. After the first 30 credits, they need to complete an additional 15 credit hours of course work (including ENGL 8830 Dissertation Tutorial) plus 12 credit hours of ENGL 8999 Doctoral Dissertation. With permission of the director of graduate studies, students may take up to 18 credits (6 courses) at the 5000 level.

**Required course work:**

- ENGL 8820 Studies in Modern Critical Theory and Practice 3
  or ENGL 8282 Advanced Studies in Modern Critical Theory and Practice
- ENGL 6965 Practicum in Teaching Writing 3

**Electives - choose 12 classes from the following:**

- ENGL 6210 Literature to 1500 3
- ENGL 6215 16th and 17th Century Literatures 3
- ENGL 6220 Studies in Shakespeare 3
- ENGL 6300 The Long 18th Century 3
- ENGL 6400 Studies in Nineteenth-Century British Literature 3
- ENGL 6500 Studies in Twentieth-Century British Literature 3
- ENGL 6600 Studies in American Literature from the Beginnings to 1900 3
- ENGL 6700 Studies in Twentieth-Century American Literature 3
- ENGL 6710 21st Century Literatures 3
- ENGL 6720 Studies in Transatlantic Literatures 3
- ENGL 6730 Studies in Transnational Literatures 3
- ENGL 6800 Studies in Genre 3
- ENGL 6810 Study in History of Literary Criticism 3
- ENGL 6820 Studies in Modern Critical Theory and Practice 3
- ENGL 6830 Studies in Literary Criticism 3
ENGL 6931  Topics in English

ENGL courses (5000-level or above)  

ENGL 6998  Professional Project in English  

ENGL 8953  Pre-Dissertation Seminar

ENGL 8995  Independent Study in English

Graduate-level (cognate) course from outside ENGL

Dissertation-related credits

ENGL 8830  Dissertation Tutorial

ENGL 8999  Doctoral Dissertation

Total Credit Hours

1  No more than 18 credit hours may be taken at the 5000 level.

2  A project developed in consultation with the director of graduate studies and an assigned faculty mentor (6 credit hours maximum).

3  Consent required from the director of graduate studies. No more than 6 credit hours may be taken outside of ENGL.

Courses

ENGL 5110. Exploring the English Language. 3 cr. hrs.
How do humans use a small set of sounds to express an infinite set of meanings? Do apes and whales and dogs have language? Why do dialects exist? Students explore the physical, cognitive and social dimensions of human language.

ENGL 5120. Anatomy of English. 3 cr. hrs.
Explore the glamour of grammar (the words are related!) as we develop a working model of the structure of sounds, words and sentences of English and develop a basis for making informed decisions about style, usage and grammar pedagogy.

ENGL 5130. History of the English Language. 3 cr. hrs.
Marauding Germanic tribes in a corner of Europe in the 5th century established an island society whose native tongue is now spoken by billions around the world as the language of business, technology, and diplomacy. This is the story of English from before Ælfric to present-day Zimbabwe. Explore the nature of linguistic change, major developments in the structure and use of the English language, and current variation in English worldwide.

ENGL 5140. Sociolinguistics. 3 cr. hrs.
Understand how every day, simply by speaking, we reconstruct the world and our place in it: our age, gender, ethnicity, socioeconomic status, place of origin and more. Grapple with the following questions: How does language reflect and create social difference? Why do languages change? What is the role of language legislation and language education in working for social justice? Topics may include linguistic diversity in Milwaukee, World Englishes, language and gender, and African-American English.

ENGL 5170. Studies in Language. 3 cr. hrs.
In-depth study on a topic such as Language, Gender and Power; Language and Social Identity; English as World Language; Languages of Milwaukee, among others. See course listings on English Department website for current course topics.

ENGL 5210. Writing, Literacy, and Rhetoric Studies. 3 cr. hrs.
This theory and writing course invites students to explore current topics within rhetoric and composition, such as community literacy, digital rhetoric, multimodal composing, women's rhetorics, rhetorics of peace, writing and race and so on. Students engage these (inter)disciplinary conversations by developing scholarly and/or community-based projects that combine critical thinking, research, and reading, writing, speaking, and listening skills.

ENGL 5220. Rhetorical Theories and Practices. 3 cr. hrs.
What is rhetoric, and how does a knowledge of rhetorical theories enhance critical thinking, reading, writing, speaking and listening? In this theory and writing course, students explore these questions and others by exploring rhetorical theories spanning from Greco-Roman ideas about the logic and ethics of argument to contemporary concepts of identification, performativity and raced voices and consciousness. Assignments may include opportunities to analyze texts, people and cultures and to compose and revise texts in different genres, media, contexts and styles for a variety of audiences. May not be counted as a Literature course.

ENGL 5221. The Rhetoric of Martin Luther King, Jr. and Malcolm X. 3 cr. hrs.
Examines two of the most well-known figures from the African American civil rights movement of the 1960s: Martin Luther King, Jr. and Malcolm X. Evaluates the rhetoric of King and Malcolm X within their historical contexts and contemporary narratives about them.

ENGL 5230. Writing Center Theory, Practice and Research. 4 cr. hrs.
How can conversations about writing help writers? What are the challenges and rewards of peer tutoring? How can writing centers promote change? Students address these questions and others while studying the theory and practice of peer tutoring. Topics drawn from writing center scholarship include processes of written, oral, and multimodal composition; concepts of genre and situation; and strategies for giving writers effective feedback. Includes a required writing center "internship." Students who complete 4230 can apply to become Ott Memorial Writing Center tutors.
ENGL 5250. Creative Writing: Fiction. 3 cr. hrs.

“Tragedy is when I cut my finger. Comedy is when you fall into an open sewer and die.” So says that great theorist of narrative craft, the filmmaker Mel Brooks. Of course, most of life (and most of the fiction that tries to reflect the complexity of life) falls all along the spectrum between (and including) those two poles. Gives students an opportunity both to exercise their narrative imagination and to harness it productively to explore that spectrum. Learn the craft and techniques of writing fiction and develop their understanding of the creative process by analyzing published fiction from the practitioner’s perspective, by writing and revising fiction and by discussing their work and the work of their peers in workshop. May not be counted as a Literature course.

ENGL 5260. Creative Writing: Poetry. 3 cr. hrs.

Poetry is all about surprise. As Robert Frost put it, ‘I have never started a poem yet whose end I knew. Writing a poem is discovering.’ The practice of poetry benefits anyone who wants to write—and think—in innovative ways about themselves and their world(s). Students explore the work of living poets while developing a portfolio of their own drafts and revisions. The workshop format is open and accessible to all—from beginners to advanced practitioners—and allows every student to find a voice in the context of a supportive, rigorous and exploratory atmosphere. May not be counted as a Literature course.

ENGL 5301. Medieval Literature and Chaucer. 3 cr. hrs.

‘The Canterbury Tales’ sets itself in the late decades of fourteenth-century England when political upheavals and revolts against feudal hierarchy were abroad in both country and court: agricultural workers rising up against tax burdens, friars being viewed as figures of excess, women increasing pressure to compete in the marketplace and to travel, prompting thereby hundreds of treatises censuring them as unruly and dangerous to society. Chaucer, however, seems to have thrived on such havoc. His are nervy questions in his ‘Tales’ as he explores corruption within the Church, the dangerous and comical effects of courtly love, women challenging clerical interpretation of Scripture, men who try to hold their wives “narre in cage,” what constitutes happiness, the impulses behind our choices, and the clergy’s abuse of knowledge. The explorations are both comic and dead-serious. Text include ‘Troilus and Criseyde’ and ‘The Canterbury Tales’.

ENGL 5303. Studies in the Medieval Imagination. 3 cr. hrs.

Discover the origin of the very discipline we now call “English”, in its emphasis on “close reading” and “critical thinking”, in the medieval habits of reading the Bible allegorically for figurative meaning. Then as now, medieval bookworms sought to uncover the hidden truths that lay just below its surface. In the process, they read, absorbed and in turn produced their own allegorical texts, in which they clothed alien concepts in layers of symbolism and myth.

ENGL 5311. Themes in Medieval Literature. 3 cr. hrs.

Starting with the key sources in classical antiquity that informed English poets’ discussions of both love and war, examine the rise of English courtly love poetry in the context of a devastating and drawn-out conflict that would forever alter England’s cultural and political climate and set the stage for the birth of English nationalism: the pre-condition for the eventual formation of the British Empire and for the birth of “English” itself as an academic discipline in the university.

ENGL 5321. British Literature of the 16th Century. 3 cr. hrs.

In the decades after the Reformation, Britain was roiled by religious and political debates both intensely local and far transcending the country’s national boundaries. At the same time that its citizens were figuring out for the first time what it meant to be a nation with its own distinct language and culture. Sonnets, epics, political treatises, closet drama, and the first plays for the public stage all competed in what became the country’s first public literary marketplace, as economic and political changes helped foster the first English literature and the first conception of the person that we can call truly modern. Students make themselves present at the hotly contested beginnings of genres, categories and ideas familiar enough to them now that they take them as natural, by reading poems and plays so enduring that 400 years later they are still part of our cultural fabric.

ENGL 5341. British Literature of the 17th Century. 3 cr. hrs.

Colonialism and empire, economic slavery, regicide, revolution, one of the earliest experiments with republicanism in the modern world, the development of scientific empiricism and positivism, the invention of newspapers… all of these events and institutions in seventeenth-century Britain, so fundamental to our own culture, not only shaped but were shaped by its literature, which was one of the central public forums in which ideas were ventured and debated. Students read poems, plays, prose, and speeches by writers both famous and (now) obscure, from Francis Bacon and Mary Wroth to John Milton and Kenelm Digby, as a window into their thinking about such central problems as love, friendship, community, beauty, profit and self-interest, and political justice.

ENGL 5351. Milton. 3 cr. hrs.

In our world, in which we debate how and if we can protect our freedoms, in which our use of reason has brought us such unprecedented power to communicate but also to destroy, and in which religious discourse figures so prominently, for good and for ill, Milton has particular relevance. His apparent confidence (arrogance?) in advancing his ideas, in many works but in ‘Paradise Lost’ especially, forces each one of us to reevaluate our own. Students explore Milton’s major poetry and prose in the context of seventeenth-century England.

ENGL 5361. Literatures of Pre-Colonial and Colonial America. 3 cr. hrs.

What constitutes the earliest forms of American literature? How did writing in the Americas prior to the foundation of modern nation-states grow out of and respond to the unique circumstances of contact and collision between the “Old World” of Europe and the “New World” of America? How was colonial American literature situated in the larger geopolitical arenas of the Atlantic World, the Black Atlantic, and competing imperialist projects? Students encounter the diverse genres and multiple literary traditions that converged in North America from the initial arrival of Europeans up to the American Revolution. May take a comparative transatlantic, transnational, and / or hemispheric approach, with readings drawn from the literatures of British, French and Spanish America as well as Native American cultures.
ENGL 5402. The Novel to 1900. 3 cr. hrs.
Traces the development of the novel genre from its origins in the late seventeenth century to the end of the nineteenth, focusing on the relationship between literary form and social change. Considers writers' treatment of topics such as personal identity and individual psychology, gender and marriage, race and empire, industrialization and market culture, and political and social reform. Authors may include Daniel Defoe, Samuel Richardson, Jane Austen, George Eliot, Charles Dickens, Robert Louis Stevenson and Joseph Conrad.

ENGL 5412. Transatlantic Literature, 1700-1900. 3 cr. hrs.
Transatlantic studies reframe Anglophone literature (and sometimes literature in translation) to incorporate perspectives beyond the national. The eighteenth and nineteenth centuries were eras of economic and cultural exchange across the Atlantic ocean; this course tracks some of these "currents." Individual instructors may focus on comparative revolutions, on the Black Atlantic, on transnational romanticism, travel and exploration, slavery and abolition or other topics.

ENGL 5420. Renaissance Literature: The 16th Century. 3 cr. hrs.
A study of Tudor poetry, drama, and prose, with emphasis on literary and cultural issues of the Elizabethan period. Writers considered might include Lodge and More (prose); Shakespeare, Philip and Mary Sidney, Spenser, and Wyatt (lyric and narrative poetry); and Carey, Kyd, and Marlowe (drama).

ENGL 5422. British Literature of the Long 18th Century. 3 cr. hrs.
During the 'long eighteenth century' (1660-1830), England experienced unprecedented literary and cultural innovation: writers developed new forms of fiction, actresses appeared on stage for the first time and poets used verse as vehicles for satirical and public expression. Meanwhile, political parties took shape, the government expanded the reach of its empire, the nuclear family assumed its modern form, and burgeoning print media provided a stream of gossip and news. Students explore the era's literary developments in the context of such social, cultural and political changes. Topics vary each term.

ENGL 5423. Legal Fictions of the Enlightenment. 3 cr. hrs.
Considers the centrality of law and lawlessness to eighteenth-century British fiction, while exploring the ways in which novels can help us understand the nature and consequences of illicit acts. Addresses questions concerning justice and judgment, crime and punishment, gender and marriage, and legal terror and popular violence. Authors may include Daniel Defoe, Henry Fielding, William Godwin, Mary Wollstonecraft, Jane Austen and Walter Scott.

ENGL 5430. Renaissance Literature: The 17th Century. 3 cr. hrs.
A study of English poetry, drama and prose from 1603 to the beginnings of the neoclassical period. Writers considered might include Donne, Herbert, Herrick, Jonson, and Marvell (lyric); Bacon and Wroth (prose); and Jonson, Middleton, and Webster (drama).

ENGL 5432. US Literatures of the Revolution and New Republic. 3 cr. hrs.
The eighteenth century saw profound changes in America; there were revolutions not only in politics but in the ways people lived their everyday lives, in travel, in industry and in literature. While the American Revolution ended the colonial domination of European settlers and the founding of the United States, those citizens in turn were colonizing Native American lands and African labor. Women clamored to be included in the democratic conversation, and the ideology of "Republican Motherhood" simultaneously stimulated and constrained those desires. Students look at the ways a diverse group of writers responded to these sea changes by employing a comparative transatlantic or transpacific approach or by focusing more closely on issues specific to the North American continent; issues studied may include the rise of the novel and the changes in print culture surrounding the Revolution, or may focus on the literature of women or narratives of captivity and slavery.

ENGL 5442. US Literature from the Constitution to the Civil War. 3 cr. hrs.
The first decades of the nineteenth century marked a period of innovation and abundance in the literary history of the United States. Students explore the landmark developments of the early national and antebellum periods within the broader contexts of American cultural history, paying particular attention to the influence of Romanticism and such North American variants as New England Transcendentalism and the American Gothic. They may also explore the intersections between literature and a variety of social reform movements, such as those involving abolitionism, women's rights and Native American rights. Authors assigned may include a selection of the following: Apeess (Pequot), Brockden Brown, Cooper, Irving, Poe, Sedgwick, Emerson, Thoreau, Hawthorne, Melville, Douglass, Wells Brown, Whitman and Stowe.

ENGL 5442. British Literature of the Romantic Period, 1790-1837. 3 cr. hrs.
From the French Revolution to the Industrial Revolution, 1780-1837. How exactly did civil and human rights evolve in Great Britain? Gender, class, religious turmoil and race are also central issues in the study of works by romantic-era writers such as Jane Austen, Ann Radcliffe, William Wordsworth, William Blake, John Keats, Percy Shelley, George Gordon Byron, Samuel Taylor Coleridge and Mary Shelley. Students study thematic approaches to or surveys of the literature of the period.

ENGL 5445. Romanticism and Nature. 3 cr. hrs.
Understand how the questions raised by Romantic thinkers in reaction to a period of radical intellectual, technological and sociopolitical changes revolutionized the western world's attitude towards "nature." Through experiential learning, visits to the Riverside Urban Ecology Center, examine how, in a very immediate way, today's arguments about climate change, animal rights and ecology are products of contradictions first brought to light by Romanticism.

ENGL 5462. Gothic. 3 cr. hrs.
Vampires, werewolves, mummies and zombies have been popular representations in a wide variety of literature for more than two centuries. Examines their origins and cultural, religious, and social meanings. From Frankenstein to Dracula, or 'Carmilla' to 'The Mummy,' the gothic has explored Britain's fear of immigrants, scientific experimentation and sexual transgressions. Classic texts are read, as well as their popular manifestations in poetry, drama and short stories.
ENGL 5472. British Literature of the Victorian Period, 1837-1900. 3 cr. hrs.
Dracula, Alice in Wonderland, A Christmas Carol, “How do I love thee? Let me count the ways,” the Sherlock Holmes stories, Jane Eyre—these are all Victorian classics. A Victorian literature course introduces students to many more exciting, wise, and weird texts written in Britain during the reign of Queen Victoria (1837-1901), dealing with such topics as social justice, gender and sexuality, religious faith, empire, crime, ecology, childhood and the role of literature in an era of mass literacy. Whether it’s the Arthurian tales of Tennyson, the religious poetry of Christina Rossetti and the Jesuit Gerard Manley Hopkins, the ecocriticism of John Ruskin, Oscar Wilde’s hilarious plays, or the exploration of vocation in Middlemarch by George Eliot (Marian Evans), Victorian literature offers many great reads in addition to those that have become standards of contemporary popular culture.

ENGL 5482. US Literature from the Civil War to the Early 20th Century. 3 cr. hrs.
The period between the end of the Civil War and the beginning of the twentieth century was one of profound social, technological and political changes in the United States. Students look at how writers reflected and responded to the world of the late nineteenth century (sometimes reaching into the early twentieth century) in literature written by American authors and, sometimes, by the European writers that influenced them during this period of intense transnational literary exchange. Course may address the waxing and waning popularity of sentimental literature, the elite enthusiasm for realist literature and the related growth of regional literature, the connection between fiction and the muckraking school of journalism, the expansion of publication in magazines and newspapers, the explosion of literatures by and about immigrants, and/or African American literary production in the eras of Reconstruction and Jim Crow. Students may read works by Frederick Douglass, Walt Whitman, Emily Dickinson, Henry James, Mark Twain, William Dean Howells, W. E. B. DuBois, Charles Chesnutt, Theodore Dreiser, Frank Norris, Sarah Orne Jewett, Sarah M. B. Piatt, Zitkala Sa, Charlotte Perkins Gilman, Mary E. Wilkins Freeman and a multitude of others.

ENGL 5503. British Literature since 1900. 3 cr. hrs.
A study of the literature and culture of the early-to-mid 19th century, including the periods of the American Renaissance and the Civil War. Writers studied may include: Alcott, Child, Cooper, Dickinson, Douglass, Emerson, Fuller, Hawthorne, Melville, Poe, Stowe, Thoreau, and Whitman.

ENGL 5523. Modernism. 3 cr. hrs.
What should literature be and do in an era of war, revolution and cataclysmic cultural change? Modernist literature emerged across Europe and North America in the early twentieth century in response to this question. Old ideas and forms suddenly seemed ill-equipped to respond to the twentieth century, which led modernist artists to rebel against convention. Writers such as Joseph Conrad, Virginia Woolf, James Joyce, Samuel Beckett, Ezra Pound, T.S. Eliot, H.D., W.B. Yeats and Gertrude Stein worked across languages, national traditions and genres to reinvent the literary past and change contemporary history. In the process, they created some of the most astonishing, daring and rewarding poems, novels and plays of the twentieth century.

ENGL 5533. US Literature: 20th-Century Beginnings to World War II. 3 cr. hrs.
Students construct an overview of American literature from the beginning of the twentieth century to the end of World War II, focusing on the historical contexts of literary production. The themes and formal and stylistic aspects of the different works under discussion are situated within the context of the political, social, scientific, technological and economic transformations in this period of American history. Examines the interactions between the development of modern American literature and key issues of the period including racial segregation and racial uplift, class inequality, labor and immigration debates, the feminist movement, global war, the invention of the atom bomb and the rise of mass entertainments and consumerism.

ENGL 5543. British Literature of the Postmodernist Period. 3 cr. hrs.
Students explore modern and contemporary English literature, which engages catastrophes and humiliations blared in countless headlines, from England’s near starvation by German U-boats in World War I to the loss of the Raj, the British expulsion from Suez and not long after what was once called Rhodesia, the Christine Keeler scandal and the Falklands debacle. Whether the collapse of the British empire qualifies as disaster, opportunity, retribution, graveyard or cradle depends on who is talking. And exactly who is talking, often for the first time, is the point. As Kipling feared, Conrad hoped, and Orwell predicted, the weakening empire gave new freedom and power to the once England itself. Students study the accelerating evolution of new genres, the trade-offs of dialect literature, the appropriation and/or resistance of ‘popular’ cultures, the danger of the high-tech police state, and the search for a way to awaken the sleepwalkers and inspire the denialists without trampling their freedom, even if that freedom is enthralled to commercially motivated and cynically silenced and voiceless, not only in the former colonies and throughout the Commonwealth but within destructive mythologies. Among the storytellers and poets threading this labyrinth can be counted Auden, Orwell, Thomas, Reed, Bennett, Harrison, Wa Thiong’O, Larkin, Walcott, Hughes, Achebe, Naipaul, Heaney, Gordimer, Rushdie, Boland and Muldoon.

ENGL 5550. Twentieth-Century American Literature: The Modern Period. 3 cr. hrs.
A study of American literature of the early twentieth century with particular attention to the formal experiments of modernism. Writers studied generally include Cather, T.S. Eliot, Faulkner, Fitzgerald, Frost, Hemingway, Hurston, Larsen, Stein, Stevens, Williams, and Wright.
ENGL 5553. US Literature after World War II. 3 cr. hrs.
Students explore fiction, poetry and drama composed since World War II, with special attention to the shift from modernism to postmodernism. How has American literature in the twentieth century responded to and been influenced by the civil rights and feminist movements, the Vietnam War, anti-communism, consumer culture, environmentalism, scientific and technological progress, economic crisis, and the ever-looming threat of the nuclear bomb? What are the intersections between literary culture and popular culture, and between literary culture and the state, in the high-water years of the “American Century”? Approaches vary with instructor, but authors studied are likely to include Auster, Baldwin, Barth, Bishop, Carson, Carver, Delillo, Didion, Ellison, Erdrich, Graham, Heller, Kingston, Levine, Morrison, Nabokov, O’Connor, Ozick, Plath, Pynchon, Rich, Roth, Silko, Spiegelman, Stone, Vonnegut, Wallace, Walker and White.

ENGL 5563. Literatures of the 21st Century. 3 cr. hrs.
Students study the literature of the twenty-first century from a variety of national and transnational perspectives. How have different authors responded to the rapid social changes and urgent political crises the world has undergone since the year 2000? What role has literature played in registering and shaping our collective response to these events? What is the continued relevance of literature (and literary study) for an era increasingly dominated by nonliterary and non-narrative media forms? Possible authors include Atwood, Diaz, Ishiguro, Lahiri, Mitchell, McCarthy, Morrison, Murakami, Saramago, Sebald, Smith, Rowling, Roy, Winterson and Wallace.

ENGL 5610. Individual Authors. 3 cr. hrs.
Studies of the works of selected individual authors, usually within biographical, historical, intellectual, and/or cultural contexts. Authors studied may include Austen, the Brontes, the Brownings, Cheever and Carver, Conrad, Frost, Hardy and Hopkins, Heaney, Melville, Morrison, Wharton and Stein and Yeats. Consult Schedule of Classes or the English Department’s website for specific author(s).

ENGL 5612. J. R. R. Tolkien. 3 cr. hrs.
Explore J.R.R. Tolkien’s works, looking backward from the perspective of the twenty-first century. Consider why his works, and the genre of heroic fantasy which he remade so completely in his image, remained intensely popular, even as the world has transformed around them.

ENGL 5615. Text in Context. 3 cr. hrs.
Students engage in an in-depth, semester-long study of a “major” or “monumental” work in its cultural and historical context. Alongside a close and thorough reading of the text, such a study may include analysis of its source texts; its contemporaneous interlocutors; significant critical and theoretical responses; transmedia adaptations; unauthorized rewrites, fan fictions and sequels; and contemporary remixes. Central texts vary from year to year but may include such works as ‘Paradise Lost,’ ‘Hamlet,’ ‘Frankenstein,’ ‘Middlemarch,’ ‘Ulysses,’ ‘Invisible Man,’ ‘One Hundred Years of Solitude,’ ‘Beloved,’ ‘Almanac of the Dead’ or ‘Infinite Jest.’

ENGL 5616. Moby-Dick. 3 cr. hrs.
Engage in an in-depth, semester-long study of a Herman Melville’s classic novel Moby-Dick as a “major” or “monumental” work in its cultural and historical context. Alongside a close and thorough reading of the text, the study may include analysis of its source texts; its contemporaneous interlocutors; significant critical and theoretical responses; transmedia adaptations; contemporary prequels, rewrites or remixes.

ENGL 5617. James Joyce’s Ulysses. 3 cr. hrs.
Embark on one of the great adventures of an academic career: reading James Joyce’s dazzling, gorgeous, messy novel, Ulysses. The board at the Modern Library (among others) calls it the best novel of the twentieth century, which is a fitting vindication for a novel that was once put on trial in New York (in the 1934 case THE UNITED STATES vs. ONE BOOK CALLED ‘ULYSSES’). Ulysses depicts the ordinary lives of Leopold Bloom, Molly Bloom, and Stephen Dedalus on a single day in Dublin in 1904 (June 16th, Bloomsday, a day celebrated around the world each year with readings, re-enactments, and revelry). Joyce began his novel during the First World War by remaking Homer’s epic of homecoming, the Odyssey, to celebrate the value of the everyday lives of ordinary men and women. We read Ulysses alongside three precursor texts that will help us to better understand it: the Odyssey, Shakespeare’s Hamlet, and Joyce’s Portrait of the Artist as a Young Man. The course environment demands both serious intellectual engagement and a willingness to think in playful, creative ways.

ENGL 5620. Chaucer. 3 cr. hrs.
A study of Chaucer’s works with emphasis on his techniques, thematic concerns, cultural contexts, and place in literary history.

ENGL 5710. Studies in Genre. 3 cr. hrs.
Advanced study of a particular genre and its ability to articulate meaning in historical, social and/or literary contexts. Offerings have included Romance and Epic in Early Modern England, the Family Novel, the Novella, the Epic, the Court Romance and the American Western. Consult Schedule of Classes or the English Department’s website for specific topics.

ENGL 5715. Children’s Literature. 3 cr. hrs.
How does writing for children negotiate the boundaries between instruction and entertainment? How does it engage with controversial social issues? How is it situated in the broader currents of British and American cultural history? How is it gendered and classed? Students survey an array of texts written for children but compelling for adult readers too. Students are introduced to a range of critical approaches that reveal complexity, sophistication and surprises in these seemingly “simple” texts. Readings may include fairy tales, ‘Alice in Wonderland,’ ‘Little Women,’ ‘The Adventures of Tom Sawyer,’ ‘Treasure Island,’ ‘Peter Pan,’ ‘The Secret Garden,’ ‘The Wind in the Willows,’ ‘Charlotte’s Web,’ and ‘Harry Potter,’ along with other classic as well as recent contributions.
ENGL 5716. Science Fiction/Fantasy, 3 cr. hrs.
“Everything is becoming science fiction,” wrote J.G. Ballard in 1971. “From the margins of an almost invisible literature has sprung the intact reality of the 20th century.” What has been the role of speculative and fantastic media in anticipating and articulating social change? How have creators in science fiction and fantasy used the relative safety of these genres’ unreal situations to comment on very real crises in politics, identity, economics, ecology and war? How have science fiction and fantasy provided a space for reflection upon and resistance to dominant ideologies, and where have they served instead to reproduce and augment such powers? What role does the imagination of improbable and impossible worlds play in contemporary life? Content may range from surveys of different periods in the history of science fiction and fantasy to focused study of particular themes, subgenres and authors.

ENGL 5717. Comics and Graphic Narrative, 3 cr. hrs.
Students explore the production and reception of comics and graphic narrative as a literary-artistic form, with topics ranging from the early history of the genre to its ongoing fixation on the figure of the superhero to the development of an international art movement crossing gender, class and ethnic lines. Texts discussed may include DC and Marvel superhero comics, manga and anime, 'Watchmen,' 'Maus,' 'Persepolis,' 'Fun Home,' 'Gemma Bovery,' 'Buddha,' 'Understanding Comics,' underground and alternative comics and ‘Jimmy Corrigan: The Smartest Kid on Earth.’

ENGL 5718. British Humor, 3 cr. hrs.
At least since Monty Python achieved world-wide popularity, critics and fans have identified a distinctively British form of humor. Students explore the characteristics associated with British humor—e.g., nonsense, absurdity, surrealism, parody, verbal play, drag, scatology—through various periods and genres, depending upon instructor. Authors may include William Congreve, Jonathan Swift, Oscar Wilde, Gilbert and Sullivan, Lewis Carroll, Ivy Compton Burnett, P. G. Wodehouse, Joe Orton, Alan Bennett and David Lodge.

ENGL 5734. The Epic. 3 cr. hrs.
Epic poetry is one of the oldest literary genres, and in the western literary tradition it has always been intimately associated with exploring the unknown —whether far-off oceans, the edges of the theological universe, or the dark territory of the self. Surveys four of the most important literary epics in the western tradition: Virgil’s Aeneid, Dante’s Inferno, Milton’s Paradise Lost and Barrett Browning’s Aurora Leigh. All four document how exploring distant realms always, at the end of the day, means exploring yourself. These epics ask their heroes where they came from and where they’re going as ways of forcing them to understand who they are.

ENGL 5736. Fiction. 3 cr. hrs.
‘There is no doubt,’ says Doris Lessing, ‘that fiction makes a better job of the truth.’ What is the connection between fiction and truth? Why are stories (narrative fictions) so compelling? Fiction takes a variety of forms, including the novel, the short story, the story cycle, the novella, the graphic novel, etc. New media has added to these in the forms of collaborative tales, fan fiction and hypertextual works, for examples. Students focus on one specific fictional form (topics vary by term) and study it in depth. Upon completing the course, students have a firm grasp of the form’s literary conventions, relation to the cultural/historical contexts of its production and ongoing reception, and relation to other literary genres.

ENGL 5737. Creative Nonfiction. 3 cr. hrs.
Where does fact end and fiction begin? Sometimes referred to as the “literature of fact,” creative nonfiction blurs the line between literary art (poetry, fiction, and drama) and “objective” writing practices of research and reportage (history and journalism). Works of creative nonfiction have been galvanizing forces in the transformation of public opinion, influencing debates on the abolition of slavery, the environment, pacifism, women’s rights and more. Students explore different types of creative nonfiction including documentary, literary journalism, memoirs and other types of life-writing, and travel writing. Students engage creative nonfiction to explore ethical issues that might arise from practices of fictionalization including recent high-profile cases and controversies in the journalism and popular media.

ENGL 5738. Poetry. 3 cr. hrs.
Students engage with the discipline and pleasure of poetry, from ancient sacred lyrics to twenty-first century experimental texts. The possibilities are endless: individual sections may focus on indigenous poetry of the Americas; on the poetry of witness; on feminist poetry; on long-form poetry; on ecopoetics; or on prosody; or on a particular “school” such as Deep Image, Black Arts or L=A=N=G=U=A=G=E.

ENGL 5745. Digital Literacies. 3 cr. hrs.
What does it mean to be literate in the age of digital natives? Students explore new media forms that have arisen since the mid-twentieth century, including video games, social media, digital music and art, and Internet writing. Students address questions such as: How can or should the study of literature and film include new media? How does the production and reception of different types of new media texts challenge our ideas about writing and reading? How do available technologies impact digital genres and forms? What theoretical constructs and aesthetic frameworks do they demand? And how are new media augmenting, challenging, or changing education, including university study?.

ENGL 5750. American Drama. 3 cr. hrs.
A study of American drama with emphasis on form and function of the genre. Course emphasis and authors taught can vary with instructor. Consult Schedule of Classes or the English Department's Web site for specific topic.

ENGL 5755. Law and Literature. 3 cr. hrs.
From Sophocles and Shakespeare to Herman Melville and Toni Morrison, Western writers have long been fascinated by questions of law and literature. Students consider the ways in which imaginative writers have responded to and shaped legal and ethical concerns that remain of interest to this day. Topics may include the nature of law; the limits of legal authority; the legal construction of gender, race, and class; and the problem of crime and punishment.
ENGL 5761. Medicine and Literature. 3 cr. hrs.
Study "illness stories" in multiple genres that span the eighteenth through the early twentieth centuries to explore the ways our culture constructs stories of sickness and how those stories shape our own experiences of health and wellbeing. By contrasting illness stories from distinct and sometimes radically opposing perspectives—e.g., the experience gap between doctor and patient; profoundly different cultural notions of health; and illness stories affected by differences in gender, race, class and social status—we learn how to listen and respond to the enormous variety of ways people tell their "illness stories." In the literary subdiscipline called Narrative Medicine, such listening skills are called "empathetic witnessing"—a key skill this course hopes to teach. In order to become empathetic witnesses to the illness stories of others, the course challenges students to reflect on these questions: What forms do we choose to relate our tales of sickness—individually and culturally? What are the differences between how doctors, patients, family and other witnesses tell the story of an illness? How do factors like gender, race and class affect the way illness stories are told? How does the way that we choose metaphors for different maladies shape how we think about them? How do literary forms like novellas, plays, poems and creative nonfiction give us different perspectives on the illness stories they tell?

ENGL 5765. Material Cultures. 3 cr. hrs.
Shifts English studies off the page toward analysis of other sorts of objects, employing methodologies from history, anthropology, archaeology, museum studies and sociology alongside literary and linguistic methods and exploring the materiality of text and other methods of representation. Topics may range from the study of archives, museums, national parks and monuments to food, clothing, toys and games; to the history of the book; to investigation of Milwaukee architecture and historical sites.

ENGL 5770. Studies in Literature and Culture. 3 cr. hrs.
Investigates the relation between literature and its culture from a variety of perspectives that might include the historical, political or anthropological. Past offerings have included the English Urban Novel, Catholicism and Literature, and Texts, Audiences and Social Change. Consult Schedule of Classes or the English Department's website for specific topic.

ENGL 5785. Gender, Sexuality, Literature. 3 cr. hrs.
Gender and sexuality can be identities, performances, prisons, or fields for exploration. They shape public and private experience—politics, economics, education, families, friendships, even one's most personal relation to oneself. And literature is one of the central forums where writers and readers both make sense of this experience and imagine how it might be different. Students analyze changing literary representations of gender and sexuality and their intersections with other identities and categories of analysis—for instance, race and ethnicity, nationality, historical location—in order to explore the meaning and the function of these most basic building blocks in our culture.

ENGL 5786. Women Writers. 3 cr. hrs.
Students study selected women writers to engage questions, such as: What is the effect of women's social/cultural positions on their literary aesthetics? and Do women have separate and/or multiple literary traditions? To answer such questions, a range of critical methods are employed, particularly those instrumental to feminist literary criticism (e.g., historicism, archetypal criticism, psychoanalysis, poststructuralism, formalism, Marxism, and critical race and ethnic criticism). Authors studied vary by instructor.

ENGL 5810. Comparative Race and Ethnic Studies. 3 cr. hrs.
Students construct a foundation for further study in the literatures of racialized and "ethnic" groups in the United States (e.g., African American, American Indian, Asian American, Chicana/o, Latina/o, Arab American, etc.). As such, students learn key concepts necessary for more advanced work in comparative race and ethnic studies such as racial formation, varieties of privilege, intersectionality (of race, ethnicity, gender, sexual identity, class, etc.), and settler colonialism, as well as literary theoretical concerns about the relationship between aesthetic form and content, the influence of historical and cultural contexts on literary production and reception, and the political role of literature in society.

ENGL 5820. Studies in Critical Race and Ethnic Studies. 3 cr. hrs.
Explores selected topics in critical race and literary studies with the intent of allowing in-depth exploration and analysis. Topics vary by term but range from women of color feminism to Asian American literatures to literary captivities. Consult the English department website each term for specific foci. Though not required, having taken English 4810 is advantageous.

ENGL 5825. Native American / Indigenous Literatures. 3 cr. hrs.
Understand the historical and legal contexts of tribal nations within the United States and Canada and why indigenous peoples are both politically and culturally distinct from other U.S. and Canadian citizens. Read such writers as Sherman Alexie, Charles Eastman and Louise Erdrich to learn Native critical terms and concepts elucidated through oral literature, non-fiction, poetry, short stories, film and novels, primarily drawn from members of tribal nations in the United States and Canada.

ENGL 5830. Africana Literatures. 3 cr. hrs.
Explores literature produced by people of African descent. Topics vary by term. Consult the English department website each term for specific foci. Offerings may include the Harlem Renaissance; the Great Migration; Caribbean literatures; Justice, the State and Citizenship; and Race/Literature in Milwaukee after WWII. Though not required, having taken English 4810 is recommended.

ENGL 5840. Postcolonial Literatures. 3 cr. hrs.
Students explore literatures written in English since the 1960s from Africa, Southeast Asia, the Caribbean and Great Britain. Students discuss a wide range of issues including decolonization and the emergence of neocolonialism, cultural imperialism and literary responses to it by authors from what is sometimes called the Third World, and the value of art in an age defined by a ‘War on Terror’.

ENGL 5850. Global Literatures. 3 cr. hrs.
Students explore authors and texts that have become prominent on a global scale. Students read Anglophone texts as well as literary works in translation focusing on global economic, social and historical issues. Emphases and texts vary depending on instructor. Topics may include notions of universal human rights, migrant labor, issues of censorship and problems of literary translation.
ENGL 5931. Topics in Literature. 3 cr. hrs.
Topics vary according to instructor, but past offerings have included the Bible as Literature, Literary Responses to the Vietnam War, Literature and the Environment, Literature of the Holocaust, the Vikings, and Meaning and Identity. Consult the Schedule of Classes or the English Department's website for specific topics.

ENGL 5932. Topics in Writing. 3 cr. hrs.
Students study writing topics that vary according to instructor. Consult Schedule of Classes or the English Department's website for specific topic.

ENGL 5953. Seminar in Literature. 3 cr. hrs.
Advanced practice in the techniques and discipline of intensive literary study. Consult Schedule of Classes or the English Department's Web site.

ENGL 5954. Seminar in Creative Writing. 3 cr. hrs.
To paraphrase the Czech writer Milan Kundera, most people would rather believe a simple lie than a complex truth. Students learn how to write complex truths, sometimes (often? mostly?) by making stuff up. Through advanced practice in the techniques and discipline of writing, students develop proficiency with those techniques they first encountered in ENGL 4250 and 4260 and add additional techniques to their repertoire. They examine fiction, poetry, drama, or nonfiction from technical (as well as critical) viewpoints, and develop fluency in discussing writing from the practitioner's viewpoint. Offered in fiction, poetry, drama and nonfiction. Consult schedule of classes or the English department's website for specific genre.

ENGL 6200. Old English. 3 cr. hrs.
The grammar and syntax of Anglo-Saxon. Selected readings from the prose and poetry in the corpus of Anglo-Saxon literature.

ENGL 6205. Studies in Language and Linguistics. 3 cr. hrs.
Topics vary.

ENGL 6210. Literature to 1500. 3 cr. hrs.
Topics vary.

ENGL 6215. 16th and 17th Century Literatures. 3 cr. hrs.
Investigate topics in the literature, culture and politics of the Early Modern or Renaissance period in England. Topics may include: Race and Gender in Early Modern Drama; Spenser, Milton and Epic History; Literature of the Revolution (with reference to the English Civil War); and Transformations in Renaissance Humanism.

ENGL 6220. Studies in Shakespeare. 3 cr. hrs.
Topics vary.

ENGL 6300. The Long 18th Century. 3 cr. hrs.
Topics vary.

ENGL 6400. Studies in Nineteenth-Century British Literature. 3 cr. hrs.

ENGL 6500. Studies in Twentieth-Century British Literature. 3 cr. hrs.

ENGL 6600. Studies in American Literature from the Beginnings to 1900. 3 cr. hrs.

ENGL 6700. Studies in Twentieth-Century American Literature. 3 cr. hrs.

ENGL 6710. 21st Century Literatures. 3 cr. hrs.
Investigates major works of 21st century literature written in English. Explores the major concepts, methods and theoretical movements that have shaped practices of contemporary literary studies. Students write an original, self-directed scholarly essay in the field of 21st Century literary studies that intervenes in contemporary debates, with an eye toward conference presentation and eventual publication. Emphases and texts vary depending on instructor.

ENGL 6720. Studies in Transatlantic Literatures. 3 cr. hrs.
Comparative literary and cultural relations across the Atlantic Ocean; may include literature originating in Europe, Africa, the Americas and/or the Caribbean. Emphases and texts vary depending on instructor.

ENGL 6730. Studies in Transnational Literatures. 3 cr. hrs.
Investigates literary works beyond the framework of the nation-state and national literary traditions. Texts commonly include postcolonial and global literatures, including literatures translated into English. Topics may include: diaspora, postcoloniality, globalization, exile, border theory, migration, capitalism, empire, war, modernity, human rights and environmental crises. Specific emphases and texts vary depending on the instructor.

ENGL 6800. Studies in Genre. 3 cr. hrs.

ENGL 6810. Study in History of Literary Criticism. 3 cr. hrs.
Study of the major critics and texts in literary criticism and critical theory from the classical period to 20th century New Criticism.

ENGL 6820. Studies in Modern Critical Theory and Practice. 3 cr. hrs.
Presents a survey of approaches commonly used in a range of modern literary studies. The scope of epistemologies that currently shape interpretations in the discipline. Methods of archival and bibliographic research, and new research technologies.

ENGL 6830. Studies in Literary Criticism. 3 cr. hrs.

ENGL 6840. Studies in Rhetoric and Composition Theory. 3 cr. hrs.
Philosophy and theory of rhetoric, with emphasis on primary classical sources and the relationship of contemporary to classical theory. Provides theoretical background for the teaching of writing at the college level.
ENGL 6931. Topics in English. 3 cr. hrs.
Topics vary by section to offer a variety of methodological, thematic or generic approaches to bodies of literature. See Schedule of Classes or dept. website for specific topic.

ENGL 6965. Practicum in Teaching Writing. 3 cr. hrs.
Prepares doctoral students to teach in the Foundations in Rhetoric program. Students discuss pedagogical theory and practice, are paired with a faculty mentor, and design their own syllabi for the spring term.

ENGL 6995. Independent Study in English. 1-3 cr. hrs.
Prereq: Cons. of dept. ch.

ENGL 6998. Professional Project in English. 3 cr. hrs.
A project developed in consultation with the director of graduate studies and an assigned faculty mentor.

ENGL 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

ENGL 8282. Advanced Studies in Modern Critical Theory and Practice. 3 cr. hrs.
A range of modern literary theories and their textual applications are examined in detail. Consists of writings from a selection of different critical movements, which may include: Formalism, Semiotics, Structuralism, Rhetorical Studies, Narrative Theory, Psychological Criticism, Feminist Inquiry, Deconstruction, Marxism, New Historicism and Cultural Studies, and Postcolonial Discourse. In addition to studying the central tenets of each theory, students also practice its application to a variety of literary texts, preferably ones relevant to their dissertations. Prereq: ENGL 6820 or equiv.

ENGL 8310. Advanced Studies in British Literature. 3 cr. hrs.
Focuses attention on issues that inform readings across the spectrum of British literature. Provides a forum where students can share research on topics of mutual interest. Prereq: Completion of M.A.; enrollment is limited to Ph.D. students.

ENGL 8350. Advanced Studies in American Literature. 3 cr. hrs.
Focuses attention on issues that inform readings across the spectrum of American literature. Provides a forum where students can share research on topics of mutual interest. Prereq: Completion of M.A.; enrollment is limited to Ph.D. students.

ENGL 8370. Advanced Studies in Genre. 3 cr. hrs.
Examines theoretical issues that inform the construction and comprehension of specific literary genres. Takes interest both in traditional conceptions of that genre and in efforts to redefine those traditional conceptions. Prereq: Completion of M.A.; enrollment is limited to Ph.D. students.

ENGL 8380. Dissertation Tutorial. 3 cr. hrs.

ENGL 8932. Advanced Studies in Selected Topics. 3 cr. hrs.
Various issues covering genres, literary periods, criticism, or language are examined in a fashion that emphasizes reading from particular critical perspectives while recognizing options for interpretation. Prereq: Completion of M.A.; enrollment is limited to Ph.D. students.

ENGL 8953. Pre-Dissertation Seminar. 3 cr. hrs.
Students prepare for ENGL 8830 and for the process of writing their dissertation proposals by designing a summer reading list and reading calendar. They also learn to write the various components of a dissertation proposal (including an annotated bibliography, an abstract, a statement of the problem, a methodology section and more). Students engage in ongoing dialogue with one another and the instructor during the course about their work, their projects, and the skills they are learning.

ENGL 8995. Independent Study in English. 1-3 cr. hrs.
A course whose mode of instruction offers a student the opportunity to study or do in-depth research on a topic or subject matter not usually offered in the established curriculum, with a current Marquette faculty of his/her choice and independent of the classroom setting. Prereq: Cons. of dept. ch.

ENGL 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

ENGL 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

ENGL 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

ENGL 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

ENGL 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

ENGL 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

ENGL 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
ENGL 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

ENGL 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

ENGL 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

ENGL 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

ENGL 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

ENGL 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

ENGL 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Exercise and Rehabilitation Science (EXRS)

**Program Director:** Kathy Lukaszewicz P.T., Ph.D.

Exercise and Rehabilitation Science website (https://www.marquette.edu/physical-therapy/exercise-rehabilitation-science.php)

### Degrees Offered

Master of Science; Doctor of Philosophy

### Department of Physical Therapy Mission

To prepare future health care practitioners and researchers with an education rich in clinical experiences, community outreach, and research opportunities to develop leaders guided by the values of “Cura Personalis.”

### Learning Outcomes

The exercise and rehabilitation science (EXRS) master's program is designed to help students gain advanced knowledge in exercise physiology principles while developing skills related to research to help transition successfully to a doctoral program or clinical post-baccalaureate programs. The EXRS doctoral program is built on the knowledge and skills of a licensed post-baccalaureate trained clinician or master's student in a related field and provides students with advanced knowledge and skills related to clinical and translational research in fields including pathokinesiology, neuroscience, motor control, exercise physiology, and sports medicine.

**Graduates of the master's degree in exercise and rehabilitation science will:**

1. Communicate clinical and translational research knowledge via strong oral skills.
2. Contribute to an original research project in an area of emphasis.

**Graduates of the doctoral degree in exercise and rehabilitation science will:**

1. Communicate clinical and translational research knowledge via strong oral skills.
2. Design and execute an original research project.
3. Communicate clinical and translational research findings via strong written skills.

### Program Descriptions

#### Master of Science

The master of science degree in exercise and rehabilitation science (https://www.marquette.edu/grad/programs-exercise-rehabilitation-science-graduate-program.php) is open to those with a related science major interested in strengthening their core undergraduate major with advanced course work in research methods, exercise physiology and rehabilitation science.

A master's degree may strengthen a pre-professional student's application for entry into physical therapy, physician assistant studies, occupational therapy or medical school. A student may choose from a variety of areas of emphasis for their degree including: community wellness, exercise physiology, neurologic control of movement, movement disorders, sports medicine including biomechanics or performance enhancement. Both thesis and non-thesis options are available.

#### Doctor of Philosophy

The doctor of philosophy in exercise and rehabilitation science (https://www.marquette.edu/grad/programs-exercise-rehabilitation-science-graduate-program.php) builds upon the core competencies of clinical degrees (anatomy, physiology, pharmacology, medical ethics and patient care) with course work in rehabilitation systems physiology, applied neurophysiology, statistics, molecular genetics and research methodology. Students gain extensive research experience in the exercise, rehabilitation and movement disorders research core laboratories housed within the exercise science program and the Department of Physical Therapy. Research includes the use of EMG, motion analysis, biomechanics, isokinetic dynamometry, fMRI, body composition, bone mineral density, diagnostic ultrasound and acute and chronic exercise training to explore mechanisms of dysfunction and develop theories for restoring function in people with movement disorders. Movement disorders cross age, gender and all ethnic boundaries and include populations with multiple sclerosis, post-traumatic stress disorder, traumatic brain injury, stroke, cancer, Type II diabetes, survivors, pediatric obesity, cardiovascular diseases and chronic pain syndromes.

**The Clinical and Translational Science Institute of Southeastern Wisconsin** is a major partner with Marquette’s exercise and rehabilitation science program. Marquette’s participation in this consortium expands opportunities for academic, medical and clinical research within Milwaukee. CTSI partner institutions include the Medical College of Wisconsin, University of Wisconsin-Milwaukee, the Milwaukee School of Engineering, the Zablocki V.A. Medical Center, Children’s Hospital of Wisconsin and Versiti Blood Center of Wisconsin.
Prerequisites for Admission

Master of Science Students

All master's applicants will need greater than a 3.000 GPA in their undergraduate work. Current Marquette undergraduate students studying in a related field (i.e., exercise physiology, biomedical sciences, speech pathology, etc.) with a 3.000 GPA or better may apply for the accelerated degree program during their junior year for admission into the master's program for their senior year.

Doctoral Students

Students must have successfully completed either a master's degree in a related discipline or a post-baccalaureate degree in a clinical profession (physician assistant studies, physical therapy, doctor of medicine, nursing, speech-language pathology, etc.) with a minimum cumulative GPA of 3.000 (based on a 4.00 scale) and meet all application requirements as outlined below.

Application Deadline

Students in the exercise and rehabilitation science (EXRS) program begin their studies in the fall of each academic year. Admissions are made on a rolling basis, so applicants are encouraged to apply early.

All required documentation must be received in the Graduate School by these dates, or earlier:

- August 1 for fall term admissions (June 1 for international applicants)

Applications must be complete by these dates.

Application Requirements

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. A curriculum vitae including work history, formal education, continuing education, licensing and certification, professional organizations, honors and awards, publications, presentations and grants.
4. A personal statement of no more than 500 words, addressing purpose for applying to the program, ability to successfully complete the program and goals (short and long term).
5. Three letters of recommendation addressing the applicant’s academic, professional, clinical, personal attributes and potential for meaningful graduate study. At least one academic reference must be included.
6. GRE scores. Required for any non-Marquette University graduate applying to the M.S. degree program. Required for doctoral applicants if their graduate/post-baccalaureate clinical degree was completed at a non-U.S. institution or if their graduate/post-baccalaureate clinical degree GPA is less than 3.000. Not required for Marquette University students or graduates, unless their degree GPA is below 3.00.
7. (For international applicants only) a minimum acceptable score on the iBT TOEFL exam of 90 overall, with minimum section scores of 25 for listening and speaking, and minimum scores of 20 for reading and writing, or other acceptable proof of English proficiency.

Applicants may wish to submit one example of written work, such as a class project, course assignment, first author publication, grant application, etc. (optional).

An interview with the admission committee is mandatory.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

General Information

Students applying to the doctoral program must have successfully completed either a master’s degree in a related discipline or a post-baccalaureate clinical degree (D.P.T., M.P.T., M.P.A., M.S.N., M.D., etc.) with a minimum cumulative GPA of 3.000 (based on a 4.00 scale). Applicants to the master’s program must have an undergraduate degree in a related field with a minimum cumulative GPA of 3.000 (based on a 4.00 scale).

The GRE (if applicable) must have been completed within the previous six years, and official scores must be sent to Marquette University directly from Educational Testing Service.
Academic Standards

A cumulative GPA of 3.000 is required in the exercise and rehabilitation science program. The Academic Regulations section of this bulletin describes the criteria and procedures for academic warnings, probation, removal of probation, and dismissal. The exercise and rehabilitation science program strictly follows these policies and procedures.

Exercise and Rehabilitation Science Master’s Requirements

The master of science in exercise and rehabilitation science requires a minimum of 36 credit hours. If a student is admitted with prerequisite deficiencies, completion of prerequisite courses does not apply toward degree requirements. The program of course work and research is determined in consultation with the student’s advisory committee. Each student is advised to take courses that are properly related to their academic background and research interests.

Thesis Program (Plan A)

The typical master’s student in Plan A must complete 21 credit hours of required core course work, 9 credit hours of electives (where no more than 5 credit hours may come from seminar or research methods courses). In addition, master’s students in Plan A complete 6 thesis credit hours, for a total of 36 credit hours. Students must defend their thesis to the satisfaction of their committee.

Non-Thesis Program (Plan B)

The typical master’s student in Plan B completes 21 credit hours of required core course work, 12 credit hours of electives (where no more than 3 credit hours may come from seminar or research methods courses), and 3 credit hours in project design and professional project courses for a total of 36 credit hours. Students must develop and submit a project, as approved by their mentor.

Required Course Work for Plan A and Plan B

Advised by the director of graduate studies and/or the student’s mentor, an admitted student creates a program plan of study that fulfills the requirements for a master’s degree in exercise and rehabilitation science within that particular student’s area of interest. All students are required to take the following courses:

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>BISC 5135</td>
<td>Clinical Human Anatomy</td>
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<tr>
<td>EXPH 5192</td>
<td>Advanced Exercise Physiology</td>
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<td>EXPH 5195</td>
<td>Advanced Exercise Physiology Laboratory</td>
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<td>BISC 5145</td>
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<td>EXRS 6001</td>
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<td>Advanced Statistics and Design 1</td>
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<td>or HEAL 8015</td>
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<td>or MSSC 5720</td>
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<td>EXRS 6958</td>
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<tr>
<td>EXRS 6957</td>
<td>Inquiry and Scientific Method 1</td>
<td>1</td>
</tr>
<tr>
<td>Plan A (Thesis) or Plan B (Non-thesis) - refer to requirements below.</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td></td>
<td>36</td>
</tr>
</tbody>
</table>

Additional course requirements - Plan A (Thesis Option)

Students select elective courses to develop a plan of study that is consistent with their personal and professional interests.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXRS 6999</td>
<td>Master's Thesis</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Additional 9 credits of electives from courses listed below or any approved graduate-level course:</td>
<td></td>
</tr>
<tr>
<td>BISC 5140</td>
<td>Functional Neuroanatomy</td>
<td>3</td>
</tr>
<tr>
<td>BISC 5155</td>
<td>Diseases of the Brain</td>
<td>3</td>
</tr>
<tr>
<td>BISC 5160</td>
<td>Molecular Pathology</td>
<td>3</td>
</tr>
<tr>
<td>BISC 5340</td>
<td>Human and Applied Medical Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BISC 7130</td>
<td>Human Gross Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>BISC 7180</td>
<td>Clinical Neuroanatomy</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 5187</td>
<td>Clinical Exercise Physiology for Special Populations</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 7189</td>
<td>Nutrition and Exercise Performance</td>
<td>4</td>
</tr>
<tr>
<td>EXRS 6001</td>
<td>Applied and Rehabilitative Systems Physiology</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6020</td>
<td>Measurements, Tests, and Techniques in Rehabilitation Science</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>EXRS 6030</td>
<td>Advanced Principles and Instrumentation in Biomechanics</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6130</td>
<td>Neuromechanical Control and Regulation of Coordinated Movement</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6201</td>
<td>Neurophysiological Principles in Disease and Rehabilitation</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6250</td>
<td>Neural Control of Locomotion</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6290</td>
<td>Brain Dissection</td>
<td>1</td>
</tr>
<tr>
<td>EXRS 6320</td>
<td>Molecular and Biochemical Techniques in Rehabilitation Health Science</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6380</td>
<td>Contemporary Rehabilitation in Pain</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6505</td>
<td>Aging and Physical Activity</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6510</td>
<td>Obesity - A Comprehensive Approach</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6515</td>
<td>Neuromuscular Plasticity in Health and Disease</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6520</td>
<td>Physiological Adaptations to Environmental Stress</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6530</td>
<td>Spinal Mechanisms of Motor Control and Implications of Rehabilitation</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6540</td>
<td>Fatigue in Health and Disease</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6550</td>
<td>Physiology of Aging</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6590</td>
<td>Performance and Rehabilitation</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6650</td>
<td>Research Methods in Exercise and Rehabilitation Science</td>
<td>1-6</td>
</tr>
<tr>
<td>EXRS 6931</td>
<td>Topics in Exercise and Rehabilitation Science</td>
<td>1-3</td>
</tr>
<tr>
<td>EXRS 6960</td>
<td>Inquiry and Scientific Method 1</td>
<td>1</td>
</tr>
<tr>
<td>EXRS 6995</td>
<td>Independent Study in Exercise and Rehabilitation Science</td>
<td>1-3</td>
</tr>
</tbody>
</table>

1 A maximum of 5 credits from EXRS 6650 and EXRS 6960 combined.

**Additional course requirements - Plan B (Non-Thesis Option)**

Students select elective courses to develop a plan of study that is consistent with their personal and professional interests.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXRS 6600</td>
<td>Project Design and Development in Exercise and Rehabilitation Science</td>
<td>1</td>
</tr>
<tr>
<td>EXRS 6998</td>
<td>Professional Project in Exercise and Rehabilitation Science</td>
<td>2</td>
</tr>
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</table>

Additional 12 credits of electives from courses listed below or any approved graduate-level course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BISC 5140</td>
<td>Functional Neuroanatomy</td>
<td>3</td>
</tr>
<tr>
<td>BISC 5155</td>
<td>Diseases of the Brain</td>
<td>3</td>
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<tr>
<td>BISC 5160</td>
<td>Molecular Pathology</td>
<td>3</td>
</tr>
<tr>
<td>BISC 5340</td>
<td>Human and Applied Medical Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BISC 7130</td>
<td>Human Gross Anatomy</td>
<td>5</td>
</tr>
<tr>
<td>BISC 7180</td>
<td>Clinical Neuroanatomy</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 5187</td>
<td>Clinical Exercise Physiology for Special Populations</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 7189</td>
<td>Nutrition and Exercise Performance</td>
<td>4</td>
</tr>
<tr>
<td>EXRS 6001</td>
<td>Applied and Rehabilitative Systems Physiology</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6020</td>
<td>Measurements, Tests, and Techniques in Rehabilitation Science</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6030</td>
<td>Advanced Principles and Instrumentation in Biomechanics</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6130</td>
<td>Neuromechanical Control and Regulation of Coordinated Movement</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6201</td>
<td>Neurophysiological Principles in Disease and Rehabilitation</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6250</td>
<td>Neural Control of Locomotion</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6290</td>
<td>Brain Dissection</td>
<td>1</td>
</tr>
<tr>
<td>EXRS 6320</td>
<td>Molecular and Biochemical Techniques in Rehabilitation Health Science</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6380</td>
<td>Contemporary Rehabilitation in Pain</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6505</td>
<td>Aging and Physical Activity</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6510</td>
<td>Obesity - A Comprehensive Approach</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6515</td>
<td>Neuromuscular Plasticity in Health and Disease</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6520</td>
<td>Physiological Adaptations to Environmental Stress</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6530</td>
<td>Spinal Mechanisms of Motor Control and Implications of Rehabilitation</td>
<td>2</td>
</tr>
<tr>
<td>EXRS 6540</td>
<td>Fatigue in Health and Disease</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6550</td>
<td>Physiology of Aging</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6590</td>
<td>Performance and Rehabilitation</td>
<td>2</td>
</tr>
</tbody>
</table>
EXRS 6650 Research Methods in Exercise and Rehabilitation Science 1 1-6
EXRS 6931 Topics in Exercise and Rehabilitation Science 1-3
EXRS 6960 Inquiry and Scientific Method 2 1
EXRS 6995 Independent Study in Exercise and Rehabilitation Science 1-3

1 A maximum of 5 credits from EXRS 6650 and EXRS 6960 combined.

**Accelerated Degree Program**

The accelerated degree program (ADP) is designed for undergraduate students in related fields at Marquette University (i.e., exercise physiology, biomedical sciences, speech pathology) who wish to complete both their undergraduate degree as well as the master of science degree in exercise and rehabilitation science in just five years.

Students with a GPA of 3.000 or above may apply for admission to the five-year program during their junior year. Students must submit an application to the Graduate School, indicate their interest in the five-year program, and meet all other admission criteria as stated in the Application Requirements section.

ADP students complete graduate course work during their undergraduate senior year, which may be applied toward completion of the master of science degree with appropriate approvals. Courses are selected from the EXRS required or elective course options listed above, based on the student's academic background and in consultation with the director of graduate studies. A maximum of 17 credit hours can count toward the master of science degree in exercise and rehabilitation science. Note, however, that only 14 of the 17 can also count toward the student's undergraduate degree. The additional 3 credit hours completed while earning the bachelor of science degree count only toward the graduate degree upon transitioning to the master's program.

**Exercise and Rehabilitation Science Doctoral Requirements**

The program of course work and research for the doctoral degree in exercise and rehabilitation science is determined in consultation with the student’s advisory committee. Each student is advised to take such courses that are properly related to academic background and research interests. A doctoral student must complete a program of study defined, in conjunction with an adviser, on an approved Doctoral Program Planning Form.

A maximum of 24 credit hours from a previously earned master’s degree may be counted toward the required post-baccalaureate total of 70 credit hours required for the doctoral degree, resulting in 46 post-master’s credit hours. The credit hours required at the post-master’s level could be higher, depending on the specific course work taken at the master’s level.

Credits from graduate course work transferred in are selected from basic science foundational topics (i.e., advanced anatomy, physiology, microbiology, genetics and pharmacology). Selected courses are documented on the Doctoral Program Planning Form which must be submitted to the Graduate School by the end of the first year.

In addition to the course work completed prior to enrollment in the doctoral program, students may choose to complete graduate course work at a partnering Clinical and Translational Science Institute (CTSI) during their time of study. Once the mentor has been selected, advanced graduate electives may be chosen from any of the CTSI partner institutions (MSOE, MCW, UWM). See the Departmental Graduate Student Handbook for specific requirements. Advancement to candidacy for the doctoral degree is considered following successful completion of all requirements specified on the Doctoral Program Planning Form and after passing a doctoral qualifying examination.

**Required Post-Master's Course Work**

A typical doctoral student must complete 27 credit hours of core course work, 7 credit hours of advanced electives (minimum of 2 courses, with no more than 6 credit hours coming from a seminar or research methods course). All students are required to attend the departmental seminar series which expands the student’s knowledge in research theory, statistical analysis, basic biomechanics, kinesiology principles and ethical decision-making, as well as exposure to research opportunities within the program. In addition, doctoral candidates complete 12 credit hours of dissertation work for a combined total (including master's transfer credits) of 70 credit hours. The student must submit and defend a dissertation after completing all other formal requirements for the doctoral degree.

EXRS 6001 Applied and Rehabilitative Systems Physiology 3
EXRS 6030 Advanced Principles and Instrumentation in Biomechanics 3
EXRS 6201 Neurophysiological Principles in Disease and Rehabilitation 3
EXRS 6320 Molecular and Biochemical Techniques in Rehabilitation Health Science 2
EXRS 6953 Journal Club in Exercise and Rehabilitation Science 2
EXRS 6957 Inquiry and Scientific Method 1 1
EXRS 6958 Readings and Research 1 1
EXRS 6959 Readings and Research 2 1
EXRS 6960 Inquiry and Scientific Method 2 1
BISC 5340 Human and Applied Medical Genetics 3
PSYC 8101  Advanced Statistics and Design 1  3
or HEAL 8015  Applied Statistics for Health Sciences
or MSSC 5720  Statistical Methods
PSYC 8102  Advanced Statistics and Design 2  3
or EXRS 6020  Measurements, Tests, and Techniques in Rehabilitation Science
GRAD 6945  Exchange/Medical College of Wisconsin (Methods in Grant Preparation)  1

Elective course work - choose from course options below.  1
EXRS 8999  Doctoral Dissertation  12

Total Credit Hours  46

1  Elective credits may exceed 7 credit hours depending on amount of credit accepted in transfer from master's degree.

Elective Course Work
Students select elective courses to develop a plan of study that is consistent with their personal and professional interests.

Students complete 7 credit hours of elective courses from the list below or any approved graduate-level course.
EXRS 6130  Neumechanical Control and Regulation of Coordinated Movement  2
EXRS 6250  Neural Control of Locomotion  3
EXRS 6290  Brain Dissection  1
EXRS 6380  Contemporary Rehabilitation in Pain  2
EXRS 6505  Aging and Physical Activity  2
EXRS 6510  Obesity - A Comprehensive Approach  2
EXRS 6515  Neuromuscular Plasticity in Health and Disease  3
EXRS 6520  Physiological Adaptations to Environmental Stress  2
EXRS 6530  Spinal Mechanisms of Motor Control and Implications of Rehabilitation  2
EXRS 6540  Fatigue in Health and Disease  3
EXRS 6550  Physiology of Aging  3
EXRS 6590  Performance and Rehabilitation  2
EXRS 6600  Project Design and Development in Exercise and Rehabilitation Science  0-3
EXRS 6650  Research Methods in Exercise and Rehabilitation Science  1-6

Courses
EXRS 6001. Applied and Rehabilitative Systems Physiology. 3 cr. hrs.
An advanced and in-depth presentation of the impact of disease and rehabilitation on the major and physiologic systems. Systems may include skeletal muscle, cardiovascular, pulmonary, endocrine, immune and intermediary metabolism. Addresses clinical and translational models from a systems and disease perspective. Examples may include aging, fatigue, immobilization, cancer, multiple sclerosis, mitochondrial and metabolic disorders, chronic stress and pain. Prereq: BISC 5135 and BISC 5145.

EXRS 6020. Measurements, Tests, and Techniques in Rehabilitation Science. 3 cr. hrs.
An overview of the tests, measurements and evaluation used in exercise and rehabilitation science research. Advanced discussion of validity and reliability of measurements tools and devices. Topics include physiological and psychosocial testing. Prereq: Admitted to the graduate EXRS or NURS program; graduate course in statistics.

EXRS 6030. Advanced Principles and Instrumentation in Biomechanics. 3 cr. hrs.
Presents biomechanical concepts important to the study of human movement and activity and explores the instrumentation used in this study. Discusses and applies biomechanical principles including Newton's laws, anthropometrics, statistics, dynamics, material properties, kinetics and kinematics. Instrumentation such as electromyography, accelerometers, force transducers, optical sensor and force plates are discussed and utilized in the study of human movement. Discusses the design, implementation and calibration of these instruments. Prereq: EXRS 6001 which may be taken concurrently.

EXRS 6130. Neuromechanical Control and Regulation of Coordinated Movement. 2 cr. hrs.
In-depth study of the neural, mechanical and muscular determinants that affect the control and regulation of coordinated movement in healthy and pathological populations. Prereq: EXRS 6030.

EXRS 6201. Neurophysiological Principles in Disease and Rehabilitation. 3 cr. hrs.
Examines system level neurophysiological principles in disease and rehabilitation. Prereq: BISC 5135 and EXRS 6001.

EXRS 6250. Neural Control of Locomotion. 3 cr. hrs.
In-depth study of the neural mechanisms underlying locomotor movements, with emphasis on human locomotion. Prereq: EXRS 6201.
EXRS 6290. Brain Dissection. 1 cr. hr.
An in-depth approach to the anatomy of the human brain. Emphasizes correlations between structure and function. Prereq: Admitted to the graduate EXRS program.

EXRS 6320. Molecular and Biochemical Techniques in Rehabilitation Health Science. 2 cr. hrs.
Covers medical and forensic molecular biology, including a review of DNA/RNA structure and function, and biochemical analysis. Relevant laboratory techniques include isolation of genomic DNA from various tissue samples, PCR, RFLP, molecular diagnosis of cancer, detection of infectious agents and identification of inherited diseases. Discusses proper sample processing, handling and storage. Special topics related to specific clinical populations based upon student interests discussed and techniques reviewed.

EXRS 6380. Contemporary Rehabilitation in Pain. 2 cr. hrs.
Concepts relating to understanding the basic mechanisms of pain transmission, modulation, including how these influence clinical decision making. Prereq: PHTH 7530, which may be taken concurrently.

EXRS 6505. Aging and Physical Activity. 2 cr. hrs.
Explores the aging process using a multi-focal approach. Examines mental, physical and social facets of aging and develops the skills to program fitness and wellness activities for older adults of variable levels of health. Allows hands-on experience in leading and programming exercise with older adults while offering an opportunity to provide a valuable community service in the Milwaukee area. Prereq: EXRS 6001.

EXRS 6510. Obesity - A Comprehensive Approach. 2 cr. hrs.
Explores obesity as a disease process using a multi-focal approach. Examines mental, physical and social facets of obesity, as well as, approaches to treatment and prevention. For EXPH/ATTR students, application of classroom material occurs via service learning at a variety of sites in MPS and other area facilities. Prereq: EXRS 6001.

EXRS 6515. Neuromuscular Plasticity in Health and Disease. 3 cr. hrs.
Examines system level neurophysiological adaptations to activity, disease and rehabilitation with emphasis on sensory and motor systems. Prereq: EXRS 6001 and EXRS 6201.

EXRS 6520. Physiological Adaptations to Environmental Stress. 2 cr. hrs.
Systems based physiological responses and adaptations to acute and chronic environmental stress. Considerations given to rest and exercise conditions. Topics may include spaceflight and microgravity, hyperbaric environments, hypoxia, high altitude, heat and cold. Prereq: EXRS 6001; BISC 5135; and EXPH 4192 or EXPH 5192.

EXRS 6530. Spinal Mechanisms of Motor Control and Implications of Rehabilitation. 2 cr. hrs.
Primarily journal-based discussion with exposure to various motor control laboratories in the Midwest. Prereq: EXRS 6001 and EXRS 6201.

EXRS 6540. Fatigue in Health and Disease. 3 cr. hrs.
An advanced and in depth presentation of the neuromuscular fatigue in healthy, diseased and disabled populations. Explores neural and muscular mechanisms of neuromuscular fatigue for different task conditions and populations that may include: aging, gender, cognitive demand, environmental temperature, practice and neural and muscular disorders, such as, multiple sclerosis, cancer, chronic and acute stress conditions, Alzheimer's disease and stroke. Prereq: EXRS 6201.

EXRS 6550. Physiology of Aging. 3 cr. hrs.
Provides an understanding of the physiology of normal aging and how that differs at times to the pathophysiology of human disease. Presents the normal aging process and disease processes to determine between normal and pathologic presentation, in order to design and implement appropriate therapeutics. Describes modifications in practical areas that will enhance care of the geriatric patient. Topics may include cardiovascular, respiratory, neural systems, cognition, renal, endocrine, immunology, bone and special senses. Each class session ends in a discussion of the clinical implications as they relate to common practice or professions of choice. Prereq: EXRS 6001.

EXRS 6560. Systematic Reviews and Meta-analysis. 2 cr. hrs.
Examines the steps for conducting systematic reviews and introduction to meta-analysis. Emphasis is on practical application of the steps involved in conducting systematic reviews. Prereq: Admitted to the graduate EXRS program.

EXRS 6590. Performance and Rehabilitation. 2 cr. hrs.
Focuses on providing an advanced level understanding of the physiology of performance enhancement as it relates to rehabilitation. Topics include advanced training procedures, assessment techniques and elite training theories. Discusses common surgical procedures and rehabilitation techniques associated with elite athletes with opportunities for observation as permitted. Addresses various subsets of the population, when appropriate, regarding specificity of responses to speed, agility and power training (elite, college, women and sport specific programs). Understanding is demonstrated by incorporation of and application of background knowledge obtained in other courses (exercise physiology, strength and conditioning, biomechanics, kinesiology and orthopedic physical therapy) into the development of exercise programs for specific populations with the purpose of performance enhancement. Includes consideration of the rehabilitation of elite athletic populations experiencing conditions commonly requiring physical therapy intervention (upper or lower extremity or core injuries). Prereq: EXRS 6001.

EXRS 6600. Project Design and Development in Exercise and Rehabilitation Science. 0-3 cr. hrs.
Provides mentorship in the design and development of the non-thesis master's project to include selecting the topic, population, community or site for project, design of methods and developing the agreements or contracts for the project. 0 credit will be SNC/UNC grade assessment; 1-3 credits will be S/U grade assessment. Prereq: Admitted to the graduate EXRS program.
EXRS 6650. Research Methods in Exercise and Rehabilitation Science. 1-6 cr. hrs.
Introduction to and mastery of specific research techniques and methods associated with the research expertise of faculty in clinical and translational rehabilitation health. Prereq: Admitted to the graduate EXRS program.

EXRS 6931. Topics in Exercise and Rehabilitation Science. 1-3 cr. hrs.
Topics of current interest to exercise and rehabilitation science. Prereq: Admitted to the EXRS M.S. or Ph.D. program; or cons. of instr.

EXRS 6953. Journal Club in Exercise and Rehabilitation Science. 0-3 cr. hrs.
Scholarly presentations by visiting faculty and clinicians, resident faculty and graduate and undergraduate students on current topics related to clinical and translational health. 0 credit will be SNC/UNC grade assessment; 1-3 credits will be S/U grade assessment. Prereq: Admitted to the graduate EXRS program.

EXRS 6957. Inquiry and Scientific Method 1. 1 cr. hr.
Seminar and discussion course for students in their first year of study that presents principles and methods in relation to interpreting and presenting research. Prereq: Admitted to the graduate EXRS program.

EXRS 6958. Readings and Research 1. 0-3 cr. hrs.
Introduces readings and ongoing research in individual laboratories of faculty within the CTSI. The number of hours varies, but the rotation typically consists of two-three rotations. Involves laboratory work, attending laboratory meetings, individual meetings with laboratory PI and oral presentation of progress made in this rotation. Directs students toward potential laboratories with interest or expertise as identified by the student in areas related to exercise and rehabilitation health. Presents various techniques and methods in individual laboratories. Students select their research mentor and collaborators for their project by the end of the course. S/U grade assessment. Prereq: Admitted to the graduate EXRS program.

EXRS 6959. Readings and Research 2. 0-3 cr. hrs.
Introduces readings and ongoing research in individual laboratories of faculty within the CTSI. The number of hours varies, but the rotation typically consists of three-two-two rotations. Involves laboratory work, attending laboratory meetings, individual meetings with laboratory PI and oral presentation of progress made in this rotation. Directs students toward potential laboratories with interest or expertise as identified by the student in areas related to exercise and translational rehabilitation health. Presents various techniques and methods in individual laboratories. Students select their research mentor and collaborators for their project by the end of the course. S/U grade assessment. Prereq: Admitted to the graduate EXRS program.

EXRS 6960. Inquiry and Scientific Method 2. 1 cr. hr.
Seminar and discussion course for students in their second year of study that presents principles and methods in relation to interpreting and presenting research. Prereq: Admitted to the graduate EXRS program.

EXRS 6995. Independent Study in Exercise and Rehabilitation Science. 1-3 cr. hrs.
Independent research or guided study. Prereq: Cons. of instr. and cons. of prog. dir.

EXRS 6996. Professional Project in Exercise and Rehabilitation Science. 0-3 cr. hrs.
0 credit will be SNC/UNC grade assessment; 1-3 credits will be S/U grade assessment. Prereq: Cons. of instr.

EXRS 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of instr.

EXRS 8995. Independent Study in Exercise and Rehabilitation Science. 1-3 cr. hrs.
In-depth research on a topic or subject matter usually not offered in the established curriculum with faculty and independent of the classroom setting. Prereq: Cons. of instr. and cons. of prog. dir.

EXRS 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of instr.

EXRS 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

EXRS 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

EXRS 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

EXRS 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

EXRS 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.
EXRS 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9989. Doctoral Comprehensive Exam Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.

EXRS 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of graduate prog. dir.
Graduate School (Grad)

The courses listed in this section of the bulletin do not constitute a program or degree offering, but are placed under the Graduate School heading for convenience and because they do not belong to any one graduate program.

Students interested in taking any of the GRAD courses must contact the Graduate School in order to register.

Anthropology Courses

ANTH 5144. The Rise of Agriculture. 3 cr. hrs.
Process and variation in the development of farming and herding societies. Archaeological record pertaining to domestication of plants and animals in North and South America, Near East, Africa and East Asia.

ANTH 5245. Archaeology of Complex Societies. 3 cr. hrs.
Patterns of processes involved in the development of complex social systems. Archaeological records of state formation and urbanization in Egypt, Mesopotamia and Mesoamerica.

ANTH 5247. Bioarchaeology: Linking Bones and Behavior. 3 cr. hrs.
Reconstruct patterns of human behavior from integrated biological data sets. Archaeological evidence drawn from human skeletal, plant and faunal remains. Addresses questions of nutrition, pathology, occupation and mortuary ritual.

ANTH 5251. Human Osteology and Odontology. 3 cr. hrs.
The anatomy of the skeleton and teeth. Methods of analysis of biological dynamics of past populations including reconstruction of population structure and patterns of disease.

ANTH 5252. Origins of the Human Species. 3 cr. hrs.
The biological past of the species sapiens. The biological legacy of the non-human primate past and the fossils which exemplify the evolutionary trends of our species.

ANTH 5253. Forensic Anthropology. 3 cr. hrs.
Survey of the applications of human biology in criminalistics, including forensic applications of skeletal analysis, dermatoglyphics, DNA and hair. Studies methods of handling and analyzing these evidentiary materials, as well as the probative value each has in the criminal justice system. Special emphasis on the methods of personal identification. Reviews case studies of mass disasters, human rights abuses and homicides to demonstrate the utility of techniques taught in the course.

ANTH 5254. Sex and Evolution. 3 cr. hrs.
The evolutionary significance of sex. Mechanisms of reproduction and sexual reproduction as a source of variation. Reproductive anatomy, sexual strategies and adaptation as well as sexual selection in the order Primates.

ANTH 5316. Culture Change and Development. 3 cr. hrs.
Societal changes analyzed from holistic anthropological perspective. Recognizing factors of long-term cultural change; modernization of the West and Third World countries; ecological and social problems related to development in the contemporary world.

ANTH 5320. Culture, Law and Violence. 3 cr. hrs.
Compares legal cultures around the globe with respect to the state's use of violence to intervene in violence. Case studies include domestic violence, sexual assault and incarceration. Focuses on theories and field methods for researching legal sites.

ANTH 5420. Refugees and Migration. 3 cr. hrs.
Examines the figure of the refugee in anthropological studies, forces contributing to migration and the ways in which displacement shapes the refugee life course. Familiarizes students with institutional approaches to refugee-related interventions and the challenges and ethics of migration.

ANTH 5931. Topics in Anthropology. 3 cr. hrs.
Various topics are designated in the Schedule of Classes. May be taken a maximum of two times.

THE 5964. Archaeological Fieldwork. 3 cr. hrs.
An introduction to methods used in the excavation and analysis of prehistoric sites. Surveying techniques, stratigraphy, analyses of soils and landforms, analytical fundamentals of prehistoric material remains. Summer term offering only.
CRLS 5110. Media Perspectives on Urban Crime. 3 cr. hrs.
Historical overview of how urban crime has been portrayed in the media. Analysis of contemporary media presentations of urban crime, criminals, and the criminal justice system (including police, courts, and the correctional system). Social scientific theory and analysis regarding media portrayals of crime, criminals, and the criminal justice system.

CRLS 5120. Comparative Justice Systems. 3 cr. hrs.
The nature and character of police, prosecutorial, court and correctional activity and operations in world legal systems. An examination of common law, civil law, socialist, and Islamic systems of law and social control.

CRLS 5130. Women, Crime, and Criminal Justice. 3 cr. hrs.
Examination of the roles of women in the criminal justice system. Critical analysis of the relationship of women as offenders, as victims, and as agents of social control. Review of relevant theories and practices and both historical and contemporary issues.

CRLS 5170. Organized Crime. 3 cr. hrs.
Examination of the political, social, and economic conditions involved in the appearance and expansion of organized crime in the United States. Descriptions of structures as well as internal and external dynamics, including incentives and penalties employed by criminal groups. Explanation of investigative techniques and impact of police, courts, and correctional agencies.

CRLS 5180. Empathy, Crime and Justice. 3 cr. hrs.
Social justice approach to the study of empathy as it relates to crime and justice; explore and cultivate various modes of empathic knowing, specifically as these relate to criminal defendants, victims of crime, and various actors in the criminal justice system.

CRLS 5340. Financial Crime Investigation. 3 cr. hrs.
Introduces current perspectives and procedures used by the financial investigator in detecting and resolving financial crimes. Includes specific study of: methods of tracing funds, financial record keeping, accounting, interviewing techniques and law and evidence as they relate to financial investigations.

CRLS 5350. Neighborhoods and Crime. 3 cr. hrs.
Surveys theoretical and empirical literature on the role that neighborhood characteristics play in crime, and to examine the utility of crime prevention strategies for reducing neighborhood crime rates. Also works on developing the skills necessary to investigate Milwaukee neighborhood crime patterns and to create and deliver professional presentations and technical reports.

CRLS 5360. Crime Mapping. 3 cr. hrs.
A technological introduction to the basic functionality of ESRI's ArcGIS for mapping and analyzing crime data. Students learn skills to create crime maps and analyze crime patterns and develop a solid base upon which to build further expertise in geographic information system (GIS) software and spatial analysis.

CRLS 5400. Criminal Law and Procedure. 3 cr. hrs.
Studies criminal substantive law; constitutional limits and principles of criminal law and liability; defenses to criminal liability; definitions and classification; criminal procedure of crimes; constitutional limits and protections of criminal procedure.

CRLS 5550. Crime Control. 3 cr. hrs.
Contemporary issues in criminal justice and social control. Evaluates the effectiveness of various crime control strategies and explore their social utility and implications for social stratification. Discusses crucial socio-legal questions and philosophical debates concerning crime control policies.

CRLS 5600. Evidence. 3 cr. hrs.
Basic principles of the law of evidence. Presentation of oral and demonstrative evidence in the trial process. The quantum of proof in criminal proceedings.

CRLS 5640. Family Violence and Public Intervention. 3 cr. hrs.
Analysis of maltreatment of children, youth, spouses, and seniors within the family. Examination of causes and intervention methods emphasizing the response of actors and government agencies.

CRLS 5660. Criminal Violence in America. 3 cr. hrs.
Analysis of violent crime in American society and ways in which the criminal justice system responds to it. Examination of the causes of violent crime, its prevention, treatment and public policy ramifications. Historical and contemporary understanding of the significance of violence in American culture. Critical evaluation of methods utilized to deal with violent offenders.

CRLS 5700. Ethics in Criminal Justice. 3 cr. hrs.
An overview of prevailing ethical controversies confronting the process and agencies of contemporary criminal justice. Special attention given to concrete ethical issues and dilemmas, which are encountered regularly by participants in the major components of the criminal justice system. Attention is given to another emerging trend in the field: evidence-based criminal justice policy that relies heavily on criminal justice analytics, algorithms and predictive statistical modeling.

CRLS 5931. Topics in Criminology and Law. 3 cr. hrs.
Lectures and discussions in a broad area which, because of its topicality, is not the subject of a regular course. The special topics will be designated in the Schedule of Classes. May be taken a maximum of two times.
CRLS 6100. Advanced Social Statistics. 3 cr. hrs.
An advanced statistics course examining multivariate regression models for the social sciences and common statistical software packages including
STATA. Builds upon basic mathematical functions for advanced-level statistics. Develops advanced skills in multivariate linear OLS, GLS and
nonlinear models with categorical dependent variables. Examines techniques in regression diagnostics and tests of robustness. Concludes with model
specification of two-way interaction effects. Prereq: SOCI 2060 or equiv.

An introduction to Geographic Information Systems (GIS). Designed to provide students with a working knowledge of GIS. Gives instruction on how
to use GIS analytical tools to expand and enhance the understanding of spatially referenced phenomena. Examines foundational concepts behind
Geographic Information Science (GIScience) to properly use GIS analytical tools. Incorporates diverse learning activities including lectures, PowerPoint
presentations, instructor-led skills training and student practice sessions.

CRLS 6975. Criminal Justice Data Analytics Practicum. 3 cr. hrs.
Serves as the CJDA capstone experience. Practical application of knowledge and skills in a crime and intelligence/crime analysis unit of a criminal
justice agency. Topic determined by the instructor in conjunction with a community partner from a criminal justice-related institution, agency or
organization within the Milwaukee community. Designed to afford graduate students the opportunity to use their skills to solve an organizational
problem and to cultivate relationships with community partners. Prereq: CRLS 6100 and admitted to the CJDA program.

Graduate Courses

GRAD 6933. Exchange/University of Wisconsin-Milwaukee. 1-5 cr. hrs.
In conjunction with the exchange program established between Marquette University and the University of Wisconsin-Milwaukee, students may enroll
in a graduate-level course at the University of Wisconsin-Milwaukee while enrolled in the master's or doctoral program at Marquette. The UWM course
title and credits are identified by this GRAD exchange course. A maximum of two of these GRAD exchange courses may be included in the required
minimum course work for the student's program of study at Marquette. This course extends beyond the Marquette term; students receive an IC grade
initially. The IC will be changed to an A-F grade at the end of the course. Prereq: Cons. of dept. ch.; written cons. of the dept. and the Graduate School.

GRAD 6934. Exchange/University of Notre Dame. 1-5 cr. hrs.
As part of the consortium of Midwest Catholic Graduate Schools, students may enroll in a graduate-level course at the University of Notre Dame while
enrolled in the master's or doctoral program at Marquette. The Notre Dame course title and credits are identified by this GRAD exchange course.
A maximum of two of these GRAD exchange courses may be included in the required minimum course work for the student's program of study at Marquette.
This course extends beyond the Marquette term; students receive an IC grade initially. The IC will be changed to an A-F grade at the end of the course.
Prereq: Cons. of dept. ch.; written cons. of the dept. and the Graduate School.

GRAD 6935. Exchange/Loyola University Chicago. 1-5 cr. hrs.
As part of the consortium of Midwest Catholic Graduate Schools, students may enroll in a graduate-level course at Loyola University Chicago while
enrolled in the master's or doctoral program at Marquette. The Loyola course title and credits are identified by this GRAD exchange course. A maximum
of two of these GRAD exchange courses may be included in the required minimum course work for the student's program of study at Marquette. This
course extends beyond the Marquette term; students receive an IC grade initially. The IC will be changed to an A-F grade at the end of the course.
Prereq: Cons. of dept. ch.; written cons. of the dept. and the Graduate School.

GRAD 6936. Exchange/Saint Louis University. 1-5 cr. hrs.
As part of the consortium of Midwest Catholic Graduate Schools, students may enroll in a graduate-level course at Saint Louis University while enrolled
in the master's or doctoral program at Marquette. The Saint Louis course title and credits are identified by this GRAD exchange course. A maximum
of two of these GRAD exchange courses may be included in the required minimum course work for the student's program of study at Marquette. This
course extends beyond the Marquette term; students receive an IC grade initially. The IC will be changed to an A-F grade at the end of the course.
Prereq: Cons. of dept. ch.; written cons. of the dept. and the Graduate School.

GRAD 6945. Exchange/Medical College of Wisconsin. 1-5 cr. hrs.
In conjunction with the exchange program established between Marquette University and the Medical College of Wisconsin, students may enroll in a
graduate-level course at the Medical College of Wisconsin while enrolled in the master's or doctoral program at Marquette. The Medical College course
title and credits are identified by this GRAD exchange course. A maximum of two of these GRAD exchange courses may be included in the required
minimum course work for the student's program of study at Marquette. This course extends beyond the Marquette term; students receive an IC grade
initially. The IC will be changed to an A-F grade at the end of the course. Prereq: Cons. of dept. ch.; written cons. of the dept. and the Graduate School.

GRAD 9983. Graduate Research: Full Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

Physics Courses

PHYS 5012. Quantum Mechanics. 3 cr. hrs.
Quantum states, state vectors, observables and operators. The formal structure of quantum mechanics. Time evolution of the state vector. The
Hamiltonian, Position and momentum representations, and the wave function. One-dimensional wave mechanics and the harmonic oscillator. Three-

PHYS 5024. Modern Optics. 3 cr. hrs.
Geometric optics, classical wave theory of optics, interference, diffraction, polarization, electromagnetic theory of light, interaction of light and matter,
lasers and coherence.
PHYS 5031. Electricity and Magnetism 1. 3 cr. hrs.

PHYS 5032. Electricity and Magnetism 2. 3 cr. hrs.

PHYS 5034. Modern Optics. 3 cr. hrs.
Applications of Maxwell’s Equations to vacuum and material propagation. Both long wavelength and short wavelength limits (physical and geometric optics) are analyzed along with cavity solutions (lasers) and wave guides (microwave propagation and fiber optics).

PHYS 5046. The Physical Basis of the Biological Environment. 3 cr. hrs.
The molecular processes of life occur in a complex aqueous molecular environment. Biological molecules and their environments are governed by the principles of physics. Presents and explains physical techniques and models based on mechanics, thermodynamics, and electricity and magnetism. Shows how these apply to help characterize and understand the environments in which cells and biological molecules operate, while also helping to explain cellular and physiological processes.

PHYS 5062. Introduction to Thermodynamics. 3 cr. hrs.
Fundamental concepts of thermodynamics: temperature, internal energy, entropy and thermodynamic potentials. Laws of thermodynamics, their consequences and applications. Introduction to statistical thermodynamics.

PHYS 5065. Experimental Methods in Molecular Biophysics. 3 cr. hrs.
An introduction to the field of biological physics which develops the science and illustrates the applications of the techniques of X-ray diffraction and spin resonance to problems of biological interest: protein structural dynamics, ion channels and transport through cell membranes.

PHYS 5071. Atomic Physics. 3 cr. hrs.

PHYS 5072. Introduction to Nuclear and Elementary Particle Physics. 3 cr. hrs.
Experimental methods in nuclear and particle physics. Theories of nuclear structure, radioactivity, decay schemes, fission and fusion models, conservation laws. Elementary particle classifications and the Standard Model.

PHYS 5075. Introduction to Solid State Physics. 3 cr. hrs.
Crystal structure of solids, the reciprocal lattice and diffraction. Lattice vibrations and thermal properties. Electrons in metals, band structure and semiconductors. The Fermi surface. Dielectric and magnetic properties of solids. Superconductivity.

PHYS 5931. Topics in Contemporary Physics. 3 cr. hrs.
Topics drawn from areas of current interest, such as: astrophysics, atmospheric physics, condensed matter physics or particle physics.

Social Welfare and Justice Courses

SOWJ 5300. Advanced Practice in Social Welfare and Justice. 3 cr. hrs.
Students strengthen their skills in interviewing, data collection, problem appraisal, and the development of contracts for planned change. Competence is developed in carrying out contract plans, evaluating results, renegotiating contracts and terminating contracts. Working with families and groups is further examined.

SOWJ 5500. Ethics in Social Welfare and Justice. 3 cr. hrs.
An in-depth examination of ethical issues and special challenges that characterize the fields of social work, social welfare and social justice. Explores value dilemmas, stresses and frustrations that may confront professionals in these fields.

SOWJ 5600. Faith-based Activism. 3 cr. hrs.
Analyzes sociologically a range of historic and contemporary faith-based movements through the lens of social movement theory. Examines variations in goals, framing, strategies, mobilization, engagement of symbols and movement cultures as they are recorded in movement literature, oral histories, archives, films and scholarly studies. Prereq: SOWJ 1001 or cons. of instr.

SOWJ 5700. Global Aid and Humanitarianism. 3 cr. hrs.
Introduction to governmental, nongovernmental and volunteer efforts in global aid and humanitarianism. Explores ethical and practical dilemmas in solving internationally identified social problems, such as child soldiers, sex trafficking and global hunger. Examines how aid and humanitarian systems can be part of the problem rather than the solution. Additional areas of debate may include global health as a right and achievable goal, tensions between cultural relativism and human rights and ‘voluntourism.”.

SOWJ 5931. Topics in Social Welfare and Justice. 3 cr. hrs.
Special areas and themes. Specific topics will be designated in the Schedule of Classes.
Sociology Courses

**SOCI 5050. Urban Ethnography: The City as Laboratory. 3 cr. hrs.**
Explores urban processes and institutions 'from the inside.' Initially focuses on the study of various ethnographies. Next, requires 'hands-on' research, involving: observing human interaction, preparing field notes, conducting focused interviews, analyzing the collected data, and preparing a data-based research paper.

**SOCI 5100. Urban Life. 3 cr. hrs.**
Social psychological aspects of urban life and experience. Implications of urbanization for individuals and groups. Ecological, cultural and institutional influences. Interpersonal and intergroup relations in urban settings. Topics may include conflict, alienation and diversity.

**SOCI 5130. Sociology of Human Values. 3 cr. hrs.**
Definitions of values in economics, linguistics, communication and sociology. The value system of selected sociologists. Values and sociocultural pluralism.

**SOCI 5200. Personal Troubles and Public Issues. 3 cr. hrs.**
Deals with the social realities of troubles, which range from circumstances that we treat as irksome to major traumas in our lives that become social problems. Focuses on the commonalities shared by these various social constructions. Draws from a variety of disciplines, notably sociology, social work, anthropology, history, psychology, linguistics and rhetorical studies.

**SOCI 5250. African-American Social Thought. 3 cr. hrs.**
Examination of historical and contemporary writings of Black social theorists. The impact of historical, social, economic, and cultural factors on Blacks in the United States and alternative strategies for change.

**SOCI 5270. Urban Sociology. 3 cr. hrs.**
Urban society with special consideration of the problems of dealing with the structures, institutions, agencies and decision-making units in a metropolitan area.

**SOCI 5300. Sociology of Aging. 3 cr. hrs.**
The place of the aged in contemporary society. Disengagement and the social integration of older persons. Roles linking older persons to society and roles in hospitals, nursing homes and homes for the aged.

**SOCI 5400. Social Inequality. 3 cr. hrs.**
Theories and systems of social class in modern society. Societal structures and processes resulting from stratification phenomena.

**SOCI 5420. Sociology of Religion. 3 cr. hrs.**
The sociological study of religious groups, institutions and behavior, including relationships between religion and other areas of social life.

**SOCI 5430. Christianity and Sexuality in the U.S.. 3 cr. hrs.**
Explores the very recent historical development of sexuality and its intersections with U.S. Christianity. Engages readings from multiple disciplines, emphasizing intersectional perspectives on religion, gender, sexuality, race and social class through U.S. history.

**SOCI 5440. Sociology of Education. 3 cr. hrs.**
Sociological analysis of educational institutions with primary emphasis on contemporary U.S. urban education, student subcultures, school-community relations and innovations.

**SOCI 5450. Sociology of Sex and Gender. 3 cr. hrs.**
Biological and cultural bases of sex and gender patterns. Impact of major social institutions and processes on maintenance of gender patterns, with questions of power and dominance central to discussion. Benefits and costs of stereotypic gender patterns. Mechanisms and alternative directions for change. Historical and cross-cultural research included.

**SOCI 5460. Sociology of Work and Occupations. 3 cr. hrs.**
The diverse ways in which human beings make their livings in both industrialized and nonindustrialized societies. Career patterns and work problems. Theories about work and workers. Proposals for improving the quality of modern work.

**SOCI 5480. Complex Organizations. 3 cr. hrs.**
Theories and research on the sociology of organization. The social functions, structures and processes of formal and informal organizational systems in modern society and their relationships to social behavior. The nature and place of bureaucracies in complex societies.

**SOCI 5600. The Social Reality of Crime and Justice. 3 cr. hrs.**
A critical examination of the ways in which crime is defined, how crime control policies are established, and how the criminal justice system responds to the problem of crime. Specific attention is given to the social and political context in which crime is talked about and responded to. Alternative approaches to crime control, such as peacemaking criminology and restorative justice, are examined.

**SOCI 5660. Law and Society. 3 cr. hrs.**
The social components of legal organizations and procedural systems. The role of law as an instrument of social control and social change.

**SOCI 5680. Sociology of Mental Illness. 3 cr. hrs.**
Review of major sociological and social psychological models of madness. Analysis of definitions and responses to mental illness. Study of the social processing involved in the production, recognition and treatment of mental illness.
SOCI 5700. Political Sociology. 3 cr. hrs.
The interrelationship of politics and society. Special consideration of leadership analysis, party systems, public opinion, electoral behavior and conflict situations.

SOCI 5720. Sociology of Community. 3 cr. hrs.
Discussion of contemporary problems of rural, urban and suburban communities including ecological and communication patterns, problems of identity, organization and motivation.

SOCI 5730. Capitalism and Society. 3 cr. hrs.
Explores the relationship between capitalism and society. Examines the ways in which capitalism is an engine for freedom, prosperity and efficiency and a source of exploitation and inequality. Topics may include the role of capitalism in the environment, the health care system, economic inequality and government.

SOCI 5740. Social Change. 3 cr. hrs.
Selected topics dealing with models and theories of innovation, diffusion, resistance to change and associated conflict in and between social systems. Content varies; subtitles indicate precise contents.

SOCI 5931. Topics in Sociology. 3 cr. hrs.
Lectures and discussions in an area which, because of its topicality, is not the subject of a regular course. Specific topics are designated in the Schedule of Classes.
Health Care Data Analytics (HCDA)

Program Director: Aundrea Price, M.B.A., M.H.I.
Health Care Data Analytics website (http://www.marquette.edu/grad/programs-healthcare-data-analytics.php)

DEGREE OFFERED

Master of Science, Plan B only

PROGRAM DESCRIPTION

The master of science in health care data analytics (HCDA) is a 30-credit interdisciplinary program developed to meet the demand within the health care and auxiliary industries for professionals with advanced training in data analytics. Career opportunities continue to emerge in large, integrated health systems as well as in health care technology startups and consulting firms. Industry-specific data expertise also is needed by health insurers, software vendors, pharmacy benefit management companies, employee wellness programs, public health departments, community health centers and national non-profit organizations.

Computer science courses (15 credit hours) compose the program’s data analytics core, and health courses (15 credit hours) provide the context for applying these technical skills. The combination of course work is designed to prepare students for a practicum in the final semester. This capstone experience is an opportunity to develop and complete an independent project under the guidance of a professional mentor.

PREREQUISITES FOR ADMISSION

Applicants should have:

• An earned baccalaureate degree in any field with a GPA of at least 3.000.
• Basic information systems competency as demonstrated by a grade of B or above in an introductory coding/programming course (e.g., COSC 1010 Introduction to Software Development or COSC 6500 Foundations of Computing, or equivalent). Alternatively, proof of successful completion of a recommended introductory online Python programming course.
• Statistical literacy as demonstrated by a grade of B or above in an introductory statistics course (e.g., SOCI 2060 Social Statistics, MATH 4720 Statistical Methods, MSSC 5710 Mathematical Statistics, or equivalent). Alternatively, proof of successful completion of a recommended introductory online statistics course using R.

APPLICATION DEADLINES

Applications are reviewed on a rolling basis. Admitted students may begin their program in fall or spring.

APPLICATION REQUIREMENTS

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. A statement of purpose discussing career goals and how the program will help to reach them.
4. Up to two recommendation letters from people who can best speak to the applicant’s potential for future success as a graduate student.
5. An optional resume.
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

Health Care Data Analytics Master’s Requirements

This 30-credit interdisciplinary program is composed of 15 credit hours in data analytics courses and 15 credit hours in health courses.

The data analytics core provides students with the knowledge and skills to understand and quantify the value of decisions based on ethically balanced analyses. It teaches students to explore, analyze and visualize data, coupled with the knowledge about the organization of data for analysis and the tools for data and text mining to explain historical events or predict future outcomes. It uniquely includes an examination of the moral, ethical and societal impacts of data analytic problems, approaches and decisions important to many areas of application, and provides an understanding of the processes to justify value and the ethical choices being made. When ethically focused analytical skills are combined with knowledge of an application area, such as healthcare, they enable the analyst to suggest and verify the value of decisions from both a monetary and ethical viewpoint. An ethical focus is arguably especially important to the application of analytical skills to health care. The focus on ethically centered data analytics positions Marquette uniquely in the field of data analytics programs, and even more so in the more limited field of health care data analytics programs.
The health curriculum in this program provides the context and application for the skills and knowledge developed by the data analytics core. Through the health curriculum, students develop comprehensive lenses for harnessing analytical tools to address pressing questions in health care organizations, and approach data from the viewpoint of clinical and business operations. Without this viewpoint, the data are hollow and the analyses are theoretical. This context includes an overview of the U.S. health care system, its component parts and their inter-relationships, as well as its issues and challenges. It also includes the ways in which health care technology and data are structured and employed, and can be used to effectively to solve problems and address a host of issues, including quality improvement, individual and societal impacts of data use and data analytics, policy development and cost reduction. The program culminates in a practicum providing students an opportunity to pursue the analysis of relevant health care issues from identification through the development of analytics-driven, values-based decisions based on values that include non-quantifiable ethical concerns.

PROGRAM REQUIREMENTS

A student must complete a minimum of 30 credits of course work, with at least 24 credits at the 6000 level or higher. Required courses are:

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<th>Program</th>
<th>Course</th>
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<tr>
<td>Data Analytics Core</td>
<td>COSC 5500 Visual Analytics</td>
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<td>COSC 5820 Ethical and Social Implications of Data</td>
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<td>COSC 6510 Business Intelligence</td>
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<td>COSC 6520 Business Analytics</td>
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<td>or COSC 6540 Data Analytics</td>
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<td>COSC 6570 Data at Scale</td>
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<td></td>
<td>or COSC 6060 Parallel and Distributed Systems</td>
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<td></td>
<td>or COSC 6380 Advanced Database Systems</td>
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<tr>
<td>Health Care Context</td>
<td>HEAL 6840 The Environment of Health Care Delivery</td>
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<td>HEAL 6835 Health Care Informatics, Technology and Professional Issues</td>
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<td>HEAL 6830 Quality Improvement Science in Health Care</td>
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<td></td>
<td>HEAL 6965 Applied Health Data Analytics Practicum</td>
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<td>HEAL 8016 Advanced Applied Statistics</td>
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Total Credit Hours 30

1 COSC 6540 Data Analytics recommended for students with a programming background
2 COSC 6060 Parallel and Distributed Systems or COSC 6380 Advanced Database Systems recommended for students with a computer science background

MASTER’S DEGREE WITH THE DATA SCIENCE CERTIFICATE

The Department of Computer Science offers a data science certificate. If a health care data analytics master's student chooses to also earn the certificate, admission to both programs may be concurrent. The same courses may be used to satisfy the requirements of the master’s program and certificate, as outlined in the university bulletin for each program. Students are expected to be admitted into all programs they intend to complete, although course work completed prior to admission may be allowed to apply toward program requirements. Certificates must be approved individually via the curriculum approval process as Title IV aid eligible in order for students in any of these programs to be eligible to apply for federal financial aid.

Details on the data science certificate can be found in this bulletin.

ACCELERATED DEGREE PROGRAM

The accelerated degree program (ADP) is designed to give Marquette University undergraduate students a more efficient means to obtain a master of science degree in health care data analytics. Interested undergraduate Marquette students in their junior year (or equivalent) must meet the following criteria in order to apply for the ADP:

- Students may be pursuing a baccalaureate degree in any field.
- Students must have a minimum cumulative undergraduate GPA of 3.000.

Undergraduates participating in this program are granted early admission to the Graduate School and are allowed to take up to 12 credits of specific graduate-level courses during their senior year. Candidates for admission should submit transcripts, a statement of purpose stating how the program will help in reaching career goals, and two letters of recommendation. GRE scores are not required. Candidates for admission to this program should notify the health care data analytics program director of their intentions.

Only the following four courses (12 credits) are included in the ADP option (no substitutes):

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>COSC 6510</td>
<td>Business Intelligence</td>
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<tr>
<td>COSC 6520</td>
<td>Business Analytics</td>
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Any undergraduate student in the ADP may take between one and four courses senior year. If only one course is taken, HEAL 6840 The Environment of Health Care Delivery is recommended. If two courses are taken, HEAL 6840 The Environment of Health Care Delivery and COSC 6510 Business Intelligence are recommended. If three courses are taken, HEAL 6840 The Environment of Health Care Delivery, COSC 6510 Business Intelligence, and HEAL 6835 Health Care Informatics, Technology and Professional Issues are recommended.
History (HIST)

Chairperson: Lezlie S. Knox, Ph.D.
Department of History Graduate Program website (http://www.marquette.edu/history/grad.shtml/)

Degrees Offered
Master of Arts, Plan B only; Doctor of Philosophy

Program Description
History includes politics, economics, and aesthetics, as well as social, spiritual and cultural relations—our past, our present and our potential as human beings. The history graduate program, mindful of the discipline’s manifold importance and application, offers master of arts and doctoral degree programs in breadth and depth.

Graduate study in history permits students to increase their knowledge of the past and the processes that have shaped the human experience. Such study may prepare students for careers in scholarship, teaching or certain public service fields.

Prerequisites for Admission
For admission to the master of arts (https://www.marquette.edu/grad/programs-history.php) program, an applicant must have an undergraduate major in history or a closely related field. An applicant for the doctoral program (https://www.marquette.edu/grad/programs-history-phd.php) must possess a master of arts in history.

Application Deadline
To be considered for admission, all application requirements must be completed and received in the Graduate School by January 15 for the following fall.

Application Requirements
Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (https://www.marquette.edu/grad/future-apply.php).
2. Copies of all college/university transcripts except Marquette.¹
3. A one-page statement of purpose specifying proposed areas of study and academic interests.
4. Three letters of recommendation from former teachers.
5. GRE scores (General Test only). This requirement may be waived for M.A. applicants who are/were Marquette undergraduates or students who have completed classes at Marquette as a graduate or professional student (in a degree or non-degree status).
6. (For doctoral applicants only) a writing sample. Ideally, the sample should be the master’s thesis, but, for graduates of non-thesis programs, it may consist of a formal seminar paper.
7. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms is placed on the student’s record.

General Information
Direction and Advising
The director of graduate studies is charged with directing the department’s graduate programs and with the general advising of all graduate students in matters of course selection, financial aid and placement. In addition, each student chooses, in consultation with the director of graduate studies, a field adviser who directs the student’s field-specific work, including: the master’s essay, the selection of post-master’s course work, completion of the Doctoral Program Planning Form and the doctoral dissertation.

Degrees Overview
Students begin with the course HIST 6100 The Art and Craft of History, which provides not only methodological and epistemological approaches, but also introduces students to professors who discuss their specific interests and fields. Master of arts candidates concentrate major/minor fields in American, European (including medieval) or global histories in their 30 hours of course work. They must also pass comprehensive examinations and submit a master’s essay to fulfill degree requirements. The doctoral program offers degrees with a focus in European or United States histories. Doctoral candidates must have a master’s degree and normally complete 60 hours of course work beyond the bachelor’s. They must also pass a foreign
language examination and written and oral doctoral qualifying exams in major and minor fields. Candidates attain the doctorate with the composition and defense of a book-length dissertation.

**History Master’s Requirements**

**Specializations:** European History, United States History, Global Studies

All master’s students must complete 30 credit hours of course work, a master’s essay or public history project and a comprehensive examination. At least 18 credit hours of course work must be in history courses numbered 6000 or above, and at least six of those credits must be in research seminars. With the consent of the department chairperson, six hours of graduate work outside the department may be included in the master of arts program. Students in Medieval history are examined only in that field but must take at least six credit hours of graduate work in another field. No foreign language is required for the master’s degree.

The three major areas in the master of arts program and corresponding fields are:

- European History - Medieval, Early Modern or Modern
- United States History - Early U.S. or Modern U.S.
- Global Studies

Students in any major area may choose to complete three required courses to fulfill a focus in Public History: HIST 5100 Public History, HIST 5101 Applied History, and 3 credit hours in HIST 5986 Internship in History.

**European History Specialization Courses**

<table>
<thead>
<tr>
<th>Required courses:</th>
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</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>HIST 6954</td>
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<table>
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<tr>
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<tbody>
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<td>HIST 6525</td>
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<td>HIST 5210</td>
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<td>The Crusades</td>
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<td>The French Revolution and Napoleon, 1787 to 1815</td>
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<td>HIST 5298</td>
<td>The Cold War</td>
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Other courses as appropriate to field.

**Total Credit Hours** 30

**United States History Specialization Courses**

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<thead>
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<tbody>
<tr>
<td>HIST 6100</td>
<td>The Art and Craft of History</td>
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### HIST 6954 Seminar in History (taken twice)

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<tbody>
<tr>
<td>HIST 6110</td>
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<td>HIST 5145</td>
<td>A History of Women in America</td>
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<td>HIST 5150</td>
<td>Childhood in America</td>
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<tr>
<td>HIST 5155</td>
<td>A History of Native America</td>
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<tr>
<td>HIST 5160</td>
<td>Cultural and Intellectual History of the United States</td>
</tr>
</tbody>
</table>

Other courses as appropriate to field.

**Total Credit Hours**

30

### Global Studies Specialization Courses

**Required courses:**

9

| HIST 6100                         | The Art and Craft of History |
| HIST 6954                         | Seminar in History (taken twice) |

**Additional courses selected from:**

21

| HIST 6300                         | Global History |
| HIST 6530                         | Studies in Latin American History |
| HIST 6535                         | Studies in African History |
| HIST 6540                         | Studies in Asian History |
| HIST 6545                         | Studies in Global History |
| HIST 5310                         | Colonial Latin America |
| HIST 5320                         | United States-Latin American Relations |
| HIST 5350                         | The Caribbean |
| HIST 5355                         | History of Mexico |
| HIST 5450                         | North Africa |
| HIST 5460                         | Modern South Africa |
| HIST 5500                         | Modern Japan |
| HIST 5525                         | Age of the Samurai |
| HIST 5550                         | Medieval East Asia |
| HIST 5555                         | Modern China |
| HIST 5600                         | Comparative Twentieth-Century Genocides |

Other courses as appropriate to field.

**Total Credit Hours**

30

### Comprehensive Examination

The comprehensive written examination lasts nine hours. A committee of two examiners assess the master of arts candidate’s command of the fields of study and knowledge of historical literature. Students in U.S. and European history are examined in one major field chosen from within the three major areas of study according to their regional and chronological emphases and one minor field chosen from within the three major areas or public history. Students in Medieval history are examined in the Medieval field alone unless they take a minor in public history. Students in Global Studies are
examined in this broadly-focused major field with a concentration in Latin America, Asia, Africa, or Atlantic World. For students majoring in Medieval history or Global Studies and minorin in public history, one third of the examination will focus on public history.

ACCELERATED BACHELOR'S-MASTER'S DEGREE PROGRAM

The accelerated degree program in history allows Marquette University students to earn both a bachelor of arts degree with a major or minor in history and a master of arts degree in history in five years. This option is especially well-suited for students pursuing careers in public history and allied fields. For additional information about requirements, interested students should contact the Department of History.

ADP students complete 12 hours of approved graduate credit in history during the senior undergraduate year that count as part of the undergraduate credit hour requirement.

As seniors, the students enroll in HIST 6100 The Art and Craft of History, a required class for all entering graduate students, during the fall term. In the spring, they enroll in the graduate research seminar (HIST 6954 Seminar in History). That course may be counted as the seminar requirement for the history major. During the senior year, they also enroll in two other graduate classes at the 5000 or 6000 level that relate to their proposed field of history as advised by the director of graduate studies. These graduate courses offer students the possibility to pursue topics of interest to them in more depth than they are able to in undergraduate classes. They also couple smaller class sizes and more opportunities for participation with an emphasis on the refinement of student research skills.

Upon completion of the first term as a master’s candidate, the student must petition the Graduate School to transfer the courses taken as an undergraduate to the master’s degree. All remaining master’s degree requirements may be completed during the subsequent fall and spring terms.

As a master’s candidate, ADP students enroll in a second graduate research seminar (HIST 6954 Seminar in History) during the fall term and also complete five other graduate courses to earn the 30 credits required for the master of arts degree. The other degree requirements are the master’s essay and comprehensive exam. To allow ADP students to benefit from course work that helps exam preparation, their comprehensive exam is offered in April (other master of arts students take the exam at the regularly scheduled time in February).

History Doctoral Requirements

Specializations: European History, United States History

The two major areas in the doctoral program and subfields are:

- European History - Early Modern or Modern
- United States History - Early U.S. or Modern U.S.

Qualifying examinations, both written and oral, will be taken in both fields of the student’s major area. The oral component of the examination may also address the student’s topical research field.

In addition to the exams in the major fields, the doctoral student fulfills requirements for a research and a teaching field as defined in departmental guidelines and subject to the approval of the Graduate Committee.

A doctoral student must complete a program of study defined on an approved Doctoral Program Planning Form. The program includes course work, a reading knowledge of at least one foreign language, the qualifying examination and a dissertation.

COURSE WORK

The department’s normal course work requirement for the doctoral program is 42 credit hours beyond the master’s degree, representing 30 credit hours of course work plus the 12 credit hours required for the doctoral dissertation. In the 42 credits required, a student must complete six credit hours of research seminar courses and a three-hour dissertation seminar. If a student earned a master of arts in history at Marquette University, HIST 6100 The Art and Craft of History could be waived as part of the doctoral program, but must be replaced with an additional 3-credit history course.

European History Specialization Courses

Required courses: 12

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
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<td>Dissertation Seminar</td>
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Additional courses selected from: 18

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<td>HIST 6300</td>
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Additional courses as appropriate to field

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<tr>
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<tbody>
<tr>
<td>HIST 8999</td>
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**Total Credit Hours** 42

### United States History Specialization Courses

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<td>A History of Native America</td>
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<tr>
<td>HIST 5160</td>
<td>Cultural and Intellectual History of the United States</td>
</tr>
</tbody>
</table>

Additional courses as appropriate to field
Foreign Language Requirement

The student must have knowledge of at least one foreign language pertinent to their area of research. Reading skills in foreign languages are assessed by the department. Students may also satisfy their foreign language competency requirement by achieving at least a B in a 6204 course offered by the Department of Languages, Literatures and Cultures. Satisfactory competence in the foreign language must be demonstrated prior to the qualifying examinations, and students in continental European history must demonstrate command of the language appropriate to their research goals no later than the end of their first term of doctoral study. Failure to do so precludes further course work until the student demonstrates the appropriate language competency. The dissertation director may require a doctoral student to show competence in a second foreign language or in statistical methods when the dissertation topic requires it.

Qualifying Examination

After completing all formal course work and language study, the doctoral student must take the doctoral qualifying examinations (DQEs), written and oral, in their major fields. Written qualifying examinations are nine hours in duration. Oral qualifying examinations, two hours in duration, are held about ten days after the written examinations.

The qualifying examination covers either European (early modern and modern) or United States History (from exploration and settlement to the present). A committee of three department members assesses examination performance on the complete exam (written and oral components). A unanimous vote is required to pass the exam.

Courses

HIST 5100. Public History. 3 cr. hrs.
An examination of the means by which the skills and methods of history are applied by professionals outside the classroom. Topics include public history as a sub-discipline of history, historic preservation, and the emergence of history museums and historical societies.

HIST 5101. Applied History. 3 cr. hrs.
An examination of technologies for researching, presenting and preserving of historical materials. How to apply historic methods through digital media technologies. Topics will include systems and tools for: researching and collecting documents and materials; digitizing, editing and manipulating materials; presenting content to local and distant audiences; and preserving materials in appropriate formats. Investigates digital imaging, multimedia and Web page creation, streaming technologies, presentations systems and CD/DVD production. Also explores the unique capabilities of collaboration and distribution over high-speed networks (Internet2). Requirements include a final project on a historical topic that incorporates some or all of the technologies introduced, demonstrating mastery of content as well as technology.

HIST 5105. History and Memory. 3 cr. hrs.
Examines three interconnected themes that connect to our place and time. 1) How memory is invoked during foundational moments in a nation-state. 2) Trauma and memory in the wars of the mid-twentieth century. 3) Memory and contemporary politics. Each of these themes show how individual and collective memories are shaped, how they change over time and the ways in which marginalized communities can use memory and commemoration to affect concrete change in the form of reparations, placing of monuments, etc.

HIST 5113. American Foreign Relations 1. 3 cr. hrs.
American foreign relations from the American Revolution to the emergence of the United States as a world power. Gives equal emphasis to the conduct of American diplomacy by agents of the U.S. government and the social, economic, and cultural forces that shape foreign policies.

HIST 5114. American Foreign Relations 2. 3 cr. hrs.
American foreign relations from the American Revolution to the emergence of the United States as a world power. Gives equal emphasis to the conduct of American diplomacy by agents of the U.S. government and the social, economic, and cultural forces that shape foreign policies. Begins with World War I.

HIST 5115. The American West. 3 cr. hrs.
American westward expansion from colonial days to the 20th century, emphasizing the impact of the frontier on the development of American culture and institutions.

HIST 5120. American Immigration. 3 cr. hrs.
A survey of migration to the United States (and Britain’s North American colonies) that explores how immigrants have built communities, sought economic security and experienced cultural change. Addresses anti-immigrant sentiment, race construction and notions of cultural pluralism. Contextualizes immigration—an issue central to American identity—within a transnational framework of global labor markets, American incursions overseas and the worldwide movement of peoples.
HIST 5125. Latinx Civil Rights Movements. 3 cr. hrs.
Examines the history of Latinx civil rights movements in the United States. Traces how varied understandings of race, ethnicity, class, gender, and sexuality have shaped the ways in which Latinx communities have constructed, transformed and contested identities and senses of belonging in the U.S. and across the Americas. Special attention is paid to the ways in which these communities have fashioned social movements to respond to issues surrounding migration, civil rights, economic justice, feminism, religion, education, colonialism, militarism and popular culture. Takes a relational approach to Latinx history, examining how Latinx communities interacted and collaborated at the local, national, and international level with other communities in the United States, Latin America and beyond.

HIST 5130. Religion and American Life. 3 cr. hrs.
Survey the historical impact of religious belief and institutions on the intellectual, cultural, and public life of the United States.

HIST 5135. African-American History. 3 cr. hrs.

HIST 5140. American Urban History. 3 cr. hrs.
History of the American city from the colonial era to the present. Topics include the economic, political, and cultural effects of cities on American society, as well as America's philosophical and moral response to urbanization.

HIST 5145. A History of Women in America. 3 cr. hrs.
Survey of the history of women and the variety of women's experiences in America from pre-European contact to the present. The historical construction of gender and the ways that diverse women have shaped and contested their various experiences as mothers, daughters, wives, and partners; as farmers and workers; as slaves and conquered peoples; as reformers and political activists; and as immigrants and citizens are analyzed.

HIST 5150. Childhood in America. 3 cr. hrs.
The history of children and childhood in the United States from colonial times to the present, with an emphasis on child rearing, race, gender, class, and popular culture.

HIST 5155. A History of Native America. 3 cr. hrs.
A survey of Native American history from 1491 (before Columbus's “Discovery”) to the present. Explores the diverse cultures and histories of indigenous peoples in the present-day United States, and focuses on particular themes such as colonization and decolonization, settler colonialism, intimacy and violence, removal and “survivance,” assimilation and allotment, along with sovereignty and self-determination. Grapples with contemporary issues related to Native mascots, treaties, casinos, cultural representation, and more.

HIST 5160. Cultural and Intellectual History of the United States. 3 cr. hrs.
A survey of American thought and culture from the first contacts between indigenous peoples and Europeans, through the development of the United States to the present. Particular attention paid to those moments of intellectual and cultural conflict that illuminate and define the process by which a variety of Americans have shaped a distinct but malleable American culture.

HIST 5210. The Black Death. 3 cr. hrs.
Examines the 14th century global pandemic as a case study for examining its social, political and cultural impact on medieval societies. Investigates the relationship between the spread of plague and the physical environment, as well as assesses how modern scientific knowledge impacts our understanding of the event.

HIST 5212. The Crusades. 3 cr. hrs.
Western European and Middle Eastern relations from the 11th through the 13th centuries; includes Arabic, Byzantine, Turkish, and Mongol areas.

HIST 5245. Women in Western Civilization. 3 cr. hrs.
Survey of women's experiences in western civilization from prehistory to the present. Focusing primarily on Europe, analyzes the changing roles and responsibilities of women in the family, in the work force, and in the community and highlights the impact of phenomena such as religion, science, technology, and democracy on the shifting perceptions and definitions of gender in western civilization.

HIST 5247. Comparative Homefronts during the Second World War. 3 cr. hrs.
Explores state policies, gender ideologies, daily realities and the role(s) of civilians, particularly women, on select home fronts of World War II. The conflict was a ‘watershed’ in the use of violence aimed at civilians, who were targeted via air raids, food blockades, deportation, rape and mass murder. Using comparative framework, the course examines Germany, Italy, France, the concentration camps and the United States.

HIST 5249. Intellectual History of Modern Europe. 3 cr. hrs.
The lives and works of prominent European scientists, philosophers and artists from the Enlightenment to the present.

HIST 5250. Tudor England: 1485 to 1603. 3 cr. hrs.
The political, socio-economic, religious and cultural developments in Renaissance and Reformation England with particular attention to the personalities who dominate the Tudor court; the effects of the establishment of Caesaro-Papism by Henry VIII upon the art, architecture, literature and social life of the country.

HIST 5251. War and Revolution in Britain: 1603-1815. 3 cr. hrs.
Focuses on Britain's development as a constitutional monarchy and a commercial and imperial power. Particular attention is given to the Civil War, Glorious Revolution, American Revolution, and escalating rivalry with France climaxing in the Napoleonic Wars.
HIST 5252. Modern Britain. 3 cr. hrs.
Focuses on the democratization of Britain, the creation of the welfare state, and erosion of Victorian Britain's commercial and political global primacy reflected in the disintegration of the British Empire and fragmentation of the United Kingdom.

HIST 5255. The British Empire. 3 cr. hrs.
Survey of the creation, expansion and dismantling of the world's largest empire from the 16th century to the present. Exploration of political, social, economic and cultural factors. Emphasis on contrasting the views and experiences of Britons and of natives of various colonized areas.

HIST 5260. Modern Ireland: From the Rising to the Revolution. 3 cr. hrs.
A survey of the political and cultural history of Ireland since the Grattan parliament, focusing upon the dual legacy of constitutional and revolutionary nationalism in Irish life.

HIST 5262. Modern France. 3 cr. hrs.
France from the fall of Napoleon to the present, especially emphasizing the development of French democracy and the nation's enduring impact on world affairs.

HIST 5264. Modern Germany. 3 cr. hrs.
Survey of the major political, cultural, social and intellectual developments in modern Germany history since the Napoleonic period. Topics include: nationalism, unification, the German (Wilhelmine) Empire, the Weimar Republic, the rise of the Nazi Party, the Third Reich, the two World Wars, division, reunification and Germany's post-reunification role in Europe.

HIST 5266. Nazi Germany and the Holocaust. 3 cr. hrs.
Overview of the history of Nazi Germany between 1933 and 1945. Primarily focuses on the origins and development of the Holocaust and the attempted genocide of the Jews of Europe. Concentrates on the conception and implementation of Nazi extermination policies in German-occupied Europe during World War II, paying attention to both ideological and practical aspects of the “Final Solution.”.

HIST 5270. Russia to 1861. 3 cr. hrs.
The Slavs, the Kievan Rus Empire, the Mongol invasion, the rise of Muscovy, and the Russian empire of Peter the Great and his successors down to the emancipation of the serfs in 1861.

HIST 5271. The Russian Revolution and the Soviet Union. 3 cr. hrs.
Pre-revolutionary Russia from 1861, the Revolution of 1917, Soviet economic growth and totalitarianism, and the emergence of the USSR as a world power and its subsequent collapse.

HIST 5290. The French Revolution and Napoleon: 1787 to 1815. 3 cr. hrs.
A survey of Revolutionary Europe with emphasis on the causes and consequences of the Revolution, the Reign of Terror, the counter-revolutionary movements, the conquest of Europe, and the relation between revolution and religion.

HIST 5298. The Cold War. 3 cr. hrs.
The origins, nature and consequences of the Cold War, with emphasis on the 1945-1970 period. Topics include the continuing effects of the Cold War, prospects for new international rivalries, and the domestic consequences of the Cold War.

HIST 5310. Colonial Latin America. 3 cr. hrs.
Examines the creation of “Latin America” as a result of Spanish and Portuguese colonialism in the Americas, from the late fifteenth through the eighteenth century. Focuses on the meeting points of distinctly different cultures (primarily Amerindian, European and African); the often violent insertion of the Americas into the early modern global economy; and some of the legacies of Latin America's colonial experience in the modern world.

HIST 5320. United States-Latin American Relations. 3 cr. hrs.
Analyzes the symbiotic relationship between the United States and Latin America from 1776 to the present, focusing on the key themes of race, colonialism, resistance, transculturation, dependency, revolution, the drug trade and immigration. Examines how the United States' changing global status has affected its political, economic and cultural relationship with other countries in the Americas.

HIST 5350. The Caribbean. 3 cr. hrs.
Focuses on the contours of Caribbean history, 1400 to present. Examines Native American culture, colonialism, slavery, international trade, the politics of independence, economic development, national identity and ethnicity.

HIST 5355. History of Mexico. 3 cr. hrs.
Mexico from pre-Columbian times to the present, with emphasis on ancient civilizations, the conquest, colonial society, independence, nineteenth-century development, Porfirián dictatorship, the Revolution of 1910, and modern society since 1920.

HIST 5450. North Africa. 3 cr. hrs.
North Africa from the 7th century to the present, emphasizing Islamic and European influences.

HIST 5460. Modern South Africa. 3 cr. hrs.
Survey of the major political, economic and social developments in modern South African history since the Dutch settlement to the present. Topics include: European settlement and colonization, mineral discoveries and their impact, industrialization and social change, the establishment of the apartheid system, African resistance and post-apartheid South African society. Particular attention is given to how the state-dictated system of racial segregation and discrimination affected the lived experience of South Africa's diverse population.
HIST 5500. Modern Japan. 3 cr. hrs.
Major events, people and debates in Japanese history from 1800 to the present. Includes examinations of the ‘margins’ of Japanese history: the countryside, the common people, ethnic minorities, marginal identities, etc., in order to understand how individuals dealt with changes in Japan from its early modernity to the present day.

HIST 5525. Age of the Samurai. 3 cr. hrs.
Examines the basic themes in pre-1900 Japanese history, in particular, the time when Japan was ruled by samurai. Topics include: the rise of the military government, regional and global interaction, as well as changes in culture, economy and society throughout ancient, medieval and early modern Japan. Also examines modern-day issues.

HIST 5550. Medieval East Asia. 3 cr. hrs.
Examines the tremendous flourishing of Chinese and Japanese cultures between the 7th and 14th centuries and the influence Mongol conquests played on the diffusion of these cultures to the west.

HIST 5555. Modern China. 3 cr. hrs.
The history of China from 1800-1976, emphasizing national responses to imperial decline, western intervention, civil wars, foreign occupation and political turmoil.

HIST 5600. Comparative Twentieth-Century Genocides. 3 cr. hrs.
Examines the emergence, development, underlying causes and uses of genocide, ethnic cleansing and the other crimes against humanity in the twentieth century. Case studies include colonial genocides; the Armenian genocide; the Holocaust; the Cambodian genocide; the Rwandan genocide; and the ethnic cleansings in the former Yugoslavia. Explores responses to these crimes, denial and memory, justice and redress and strategies of prevention and intervention.

HIST 5931. Topics in History. 3 cr. hrs.
A lecture course on various areas and themes. The specific topics of 4931 courses will be designated in the Schedule of Classes.

HIST 5953. Readings in History. 3 cr. hrs.
Readings and discussion course designed to introduce a small group of undergraduates to topics, problems and methodologies in history which are not taught in the regular lecture courses. Topics are designated in the Schedule of Classes.

HIST 5986. Internship in History. 1-3 cr. hrs.
Professional experience outside of the classroom in public history editorial, teaching, public service, research, and digital humanities. Students must arrange the internship in consultation with the department chair or designate. Students work three hours per week per credit hour and submit an annotated time sheet and 3-5 page reflection paper on the work experience at the end of the term. S/U grade assessment. Prereq: Cons. of dept. ch. or designate.

HIST 5987. Internship in History: No Credit. 0 cr. hrs.
Professional experience outside of the classroom in public history editorial, teaching, public service, research or digital humanities. Students must arrange the internship in consultation with the department chair or designate. Students work ten hours per week and submit an annotated time sheet and a 3-5 page reflection paper on the work experience at the end of the term. SNC/UNC grade assessment. Prereq: Cons. of dept. ch. or designate.

HIST 6100. The Art and Craft of History. 3 cr. hrs.
The nature and theories of history, principles and methodologies of historical research, specializations within the discipline, and the professional applications of history. Required of all entering M.A. and Ph.D. students.

HIST 6102. Introduction to Cultural Heritage Management. 3 cr. hrs.
An examination of the professional identification, interpretation, preservation and stewardship of cultural artifacts and sites of historical significance. Introduces students to aspects of cultural heritage management, such as public memory, monuments and memorials; museum exhibit curation and collections management; archival science and records management; digital humanities and online museology; historical preservation and urban policy; and cultural resource management. Prereq: Cons. of dept. ch.

HIST 6104. The British Atlantic World to the American Revolution. 3 cr. hrs.
An examination of the expansion of the English empire to North America. Topics include: exploration; colony founding; the political, social and economic maturation of the colonies; the imperial system including resistance to Parliamentary laws; relations with native populations; the development of slavery; changing roles for women; and the inter-colonial wars between the English and French Empires.

HIST 6110. The American Revolution and the New Nation. 3 cr. hrs.
An examination of the creation and development of the United States to the beginnings of the sectional conflict. Topics include: the causes of the rebellion; conflicts between Americans; the war for independence; constitution making; foreign relations including the War of 1812; the roles of and the relations between the executive, legislative, and judicial branches under the constitution of 1787; westward expansion and Indian removal; the problem of slavery in national politics; and the political, social, and economic maturation of the new nation.

HIST 6120. The Sectional Conflict, Civil War Era and Gilded Age. 3 cr. hrs.
An examination of the origins and conduct of the Civil War, Reconstruction, and the political, economic, and social transformation of the United States in the late 19th century. Topics include: the political, constitutional, economic, and moral contexts of the institution of slavery; slave life and race relations; territorial expansion, the development of the West, and Native American policy; the political, social, and economic impact of the Civil War and reconstruction; the development of an American foreign policy; the evolution of political parties; industrialization, urbanization, and immigration.
HIST 6125. United States in the Twentieth Century. 3 cr. hrs.
An examination of the political, economic, and social history of the 20th century. Topics include: the United States’ rise to global power; the Progressive Era; the Great Depression; the Cold War and its related conflicts; cultural, social, and intellectual currents; the expansion of the federal government; and the evolution of political parties.

HIST 6235. Medieval Europe. 3 cr. hrs.
A guided reading program on the major issues and historiography of Europe between Late Antiquity and the beginnings of Early Modern Europe.

HIST 6240. Early Modern Europe. 3 cr. hrs.
A guided reading program on the major issues and historiography of Europe between the fifteenth and eighteenth centuries.

HIST 6245. Nineteenth-Century Europe. 3 cr. hrs.
A guided reading program on the major issues and historiography of Europe during the ‘long’ nineteenth-century.

HIST 6250. Twentieth-Century Europe. 3 cr. hrs.
A guided reading program on the major issues and historiography of 20th-century Europe.

HIST 6300. Global History. 3 cr. hrs.
A guided reading program on the major issues, methodologies, and historiography in global history.

HIST 6500. Studies in United States History. 3 cr. hrs.
Topics may vary.

HIST 6510. Studies in Medieval History. 3 cr. hrs.

HIST 6520. Studies in Early Modern History. 3 cr. hrs.
Lectures and discussions in an area which, because of its topicality, is not the subject of a regular course.

HIST 6525. Studies in European History. 3 cr. hrs.

HIST 6530. Studies in Latin American History. 3 cr. hrs.

HIST 6535. Studies in African History. 3 cr. hrs.

HIST 6540. Studies in Asian History. 3 cr. hrs.

HIST 6545. Studies in Global History. 3 cr. hrs.

HIST 6954. Seminar in History. 3 cr. hrs.
Research seminar designed to allow graduate students to engage in independent scholarship within a topical field.

HIST 6995. Independent Study in History. 1-3 cr. hrs.
Prereq: Cons. of instr. and cons. of graduate prog. dir.

HIST 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

HIST 8960. Dissertation Seminar. 3 cr. hrs.
Prereq: Doctoral stndg.

HIST 8995. Independent Study in History. 1-3 cr. hrs.
A course whose mode of instruction offers a student the opportunity to study or do in-depth research on a topic or subject matter not usually offered in the established curriculum, with a current Marquette faculty of his/her choice and independent of the classroom setting. Prereq: Cons. of dept. ch.

HIST 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment.

HIST 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
HIST 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

HIST 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Interdisciplinary Ph.D. (INPR)

Interdisciplinary Ph.D. website (https://www.marquette.edu/grad/programs-interdisciplinary-phd.php)

Degree Offered
Doctor of Philosophy

Program Description
The interdisciplinary Ph.D. program provides students and faculty with opportunities for creative customized academic programming and research that crosses the boundaries of traditional disciplines.

Each student’s program is reviewed by the Graduate School and is subject to approval by the University Board of Graduate Studies, which acts as the governing department.

Any INPR program must combine course work and expertise from two or more academic departments at Marquette. Faculty may serve on an INPR committee whether or not their department offers a doctoral degree.

Prerequisites for Admission
Due to the unique nature of the interdisciplinary program, only students who demonstrate a high degree of initiative and responsibility will be considered for admission. In addition, applicants must meet the following criteria:

1. The student must have completed a master’s degree or its equivalent.
2. The student normally must have a graduate GPA of 3.500 or above, on a 4.000 scale, in their master’s degree (or equivalent graduate work). If the student has less than a 3.500 cumulative GPA, the results of a current (within five years) standardized examination such as the GRE, GMAT, or LSAT will be required. Applications for admission are reviewed holistically. In recent years, the average GRE scores for the Graduate School have been in the range of: GRE-Quantitative 47th-77th percentile; GRE-Verbal 50th-74th percentile.

Application Process
To gain admission into the interdisciplinary Ph.D. program, the student must satisfy all application requirements, which can be found on the Graduate School website (http://www.marquette.edu/grad/programs-interdisciplinary-phd.php).

Upon approval of the UBGS, the student can be admitted and can begin taking courses in accordance with the Graduate School website (http://www.marquette.edu/grad/programs-interdisciplinary-phd.php). A maximum of 12 credit hours may be taken prior to approval of the Degree Proposal and Plan.

Interdisciplinary Ph.D. Program
INPR program requirements are specified online, on the Graduate School website (http://www.marquette.edu/grad/programs-interdisciplinary-phd.php).

Students may take a maximum of 12 credit hours prior to the approval of the Degree Proposal and Plan. During that time, students develop the Degree Proposal and Plan as specified online (http://www.marquette.edu/grad/programs-interdisciplinary-phd.php).

Interdisciplinary doctoral students must complete a minimum of 30 credit hours of course work beyond the master’s degree, satisfactorily complete a doctoral qualifying examination, complete 12 dissertation credits and successfully defend a dissertation.

Annual progress reports written by the student and endorsed by the dissertation committee chair must be submitted to the UBGS in April of each year.

Courses
INPR 8995. Independent Study in Interdisciplinary Ph.D. Program. 1-3 cr. hrs.
Prereq: Cons. of dept. ch.; cons. of graduate prog. dir.

INPR 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.; cons. of prog. dir. and admitted to INPR program; Ph.D. candidates pursuing an approved interdisciplinary Ph.D. program.

INPR 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of prog. dir. and admitted to INPR program.

INPR 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of prog. dir. and admitted to INPR program.

INPR 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of prog. dir. and admitted to INPR program.
INPR 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of prog. dir. and admitted to INPR program.

INPR 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of prog. dir. and admitted to INPR program.

INPR 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of prog. dir. and admitted to INPR program.

INPR 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of prog. dir. and admitted to INPR program.

INPR 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of prog. dir. and admitted to INPR program.

INPR 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons of prog. dir. and admitted to INPR program.

INPR 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; cons. of prog. dir. and admitted to INPR program.
International Affairs (INAF)

Chairperson: Paul Nolette, Ph.D.
Department of Political Science Graduate Program Overview website (https://www.marquette.edu/political-science/graduate-program-overview.php)

Degree Offered

Master of Arts, students are admitted under Plan B (non-thesis option) but may request Plan A (thesis option)

Program Description

The Department of Political Science at Marquette University offers a master's program in international affairs (https://www.marquette.edu/grad/programs-international-affairs.php), aimed at preparing students for international affairs-related doctoral study and careers in related fields. In addition, the department offers several dual degrees and accelerated degrees. The Political Science Department offers: an accelerated 5-year bachelor's and master's degree program in international affairs; a dual 4-year master of arts-juris doctor (M.A.-J.D.) program in international affairs in conjunction with the Law School; and dual degree programs in conjunction with the communication and the business administration graduate programs. Furthermore, Law School graduates can pursue an accelerated master of arts degree through awards of transfer credit for work completed as part of the juris doctor degree.

Prerequisites for Admission

An applicant to the master's program in international affairs should have graduated with, or be about to graduate with, a bachelor's degree from an accredited institution in an undergraduate program sufficient in quality and scope to prepare the individual for specialized work in international affairs.

Application Deadline

No official deadline exists for the international affairs master's program. However, applications submitted after the Graduate School's official financial aid deadlines will be considered only as space permits, even if the applicant is not requesting financial aid. The deadlines for financial aid consideration are Feb. 15 for the following fall term and Nov. 15 for the following spring term.

Application Requirements

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. Two letters of recommendation. A third recommendation letter is encouraged.
4. GRE scores (General Test only). Not required for accelerated B.A.-M.A. degree program applicants; M.A.-J.D. applicants may substitute LSAT scores for GRE scores; M.A.-M.B.A. applicants may substitute GMAT scores for GRE scores.
5. A statement of purpose.
6. (For international applicants only) an overall minimum TOEFL score of 100 or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

Dual Programs of Study

M.A.-J.D. Degree

The Department of Political Science, in conjunction with the Law School, offers a program of dual study leading to a master of arts degree in international affairs and a juris doctor degree.

Students seeking admission to the dual program must apply to both the Graduate School and the Law School and must meet the admission requirements for each, but their application to the Graduate School may include LSAT scores in lieu of GRE scores. Students start this dual program as a law student. Upon completion of the law program, students will be officially admitted to the international affairs program for completion of the remainder of the dual program.

Dual program students complete 81 credit hours in the Law School, 21 credit hours in political science, and 9 credit hours in dual program courses. In addition, applicants for the international affairs master of arts program who already hold a J.D. degree may request that a maximum of 9 credits from their previous law studies be counted toward the fulfillment of their master of arts degree requirements.
In general, dual program students will pay tuition at the full-time (flat tuition) Law School rate while a full-time law student, regardless of whether or not they are taking additional graduate courses. Upon receiving the juris doctor degree, dual program students will pay Graduate School tuition at the per credit rate for graduate courses. Part-time law students will pay the per credit Law School rate for all courses.

Additional details about the M.A.-J.D. program are available from the Political Science Department office or from the Law School Admissions office.

**M.A.-M.B.A. Degree**

The Department of Political Science, in conjunction with the Graduate School of Management, offers a program of dual study leading to a master of arts degree in international affairs and a master of business administration degree. The program is designed for students whose interests overlap business and international affairs. Dual degree students are able to complete both degree programs in less time than if both degrees were pursued separately.

Students seeking admission into the dual degree program must submit separate applications for admission to both the Graduate School and the Graduate School of Management, and must meet the admission requirements of each program. However, applicants may submit GRE scores in lieu of GRE scores. Acceptance into one program does not guarantee acceptance into the other. If a student is accepted into one program and not the other, the student can still choose to accept the admission offer from the first program but would not be considered a dual degree student. Because students are officially admitted into only one Marquette University graduate program at a time, applicants must indicate which program they intend to pursue and complete first, although once accepted for admission to both programs, students may take courses from both schools. Upon completion of the first program, the student will be officially admitted to the second program for completion of the remainder of the dual program.

Dual degree students count 9 credits of course work in each program toward the required course work credits of the other program. Thus, 9 of the 40 credits required for the master of business administration degree beyond foundations, if required, will come from POSC courses, and 9 of the 30 credits required for the master of arts degree in international affairs will come from GSM courses.

**M.A.-M.A. Degree**

The Department of Political Science, in conjunction with the J. William and Mary Diederich College of Communication, offers a program of dual study leading to a master of arts degree in international affairs and a master of arts degree in communication. Dual degree students are able to complete both degree programs in less time than if both degrees were pursued separately.

Students seeking admission into the dual degree program must submit separate applications for admission to both programs to the Graduate School, and must meet the admission requirements of each program. Acceptance into one program does not guarantee acceptance into the other. If a student is accepted into one program and not the other, the student can still choose to accept the admission offer from the first program but would not be considered a dual degree student. Because students are officially admitted into only one Marquette University graduate program at a time, applicants must indicate which program they intend to pursue and complete first, although once accepted for admission to both programs, students may take courses from both departments. Upon completion of the first program, the student will be officially admitted to the second program for completion of the remainder of the dual program.

Dual degree students count 9 credits of course work in each program toward the required course work credits of the other program. Thus, 9 of the 36 credits required for the master of arts degree in communication will come from POSC courses, and 9 of the 30 credits required for the master of arts degree in international affairs will come from COMM courses.

**International Affairs Master’s Requirements**

A student in international affairs is admitted to a non-thesis program (Plan B), which requires 30 credit hours of course and seminar work. The Plan B student must pass written and oral comprehensive examinations to complete the program.

Students are presumed to be in Plan B unless a formal request to transfer to a thesis program (Plan A) is approved by the department director of graduate studies and the Graduate School. Plan A requires 24 credit hours of course and seminar work and six credit hours of thesis work. The Plan A student must pass written and oral comprehensive examinations and submit an approved thesis to complete the program.

**Program Requirements**

Students in the international affairs program must complete:

<table>
<thead>
<tr>
<th>Core Seminars</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>POSC 6101 Contemporary Political Research</td>
<td>3</td>
</tr>
<tr>
<td>POSC 6401 Comparative Politics</td>
<td>3</td>
</tr>
<tr>
<td>POSC 6601 International Politics</td>
<td>3</td>
</tr>
<tr>
<td>One additional course in Comparative or International Politics</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electives</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thesis credits (Plan A) or additional course work (Plan B)</td>
<td>6</td>
</tr>
</tbody>
</table>

| Total Credit Hours                               | 30           |
At least 18 credits of the 30 credit hour requirement for Plan B students (15 credits of the 24 credit hour requirement for Plan A students) must be fulfilled in strictly graduate level course work (courses numbered 6000 or above). Up to 12 credit hours of 5000-level courses may be approved for graduate credit for Plan B students (9 credit hours for Plan A students).

Elective Course Options

The remaining 18 credit hours of course work (12 credits for Plan A) come from graduate-level POSC courses in the areas of comparative politics (POSC 6402-6599 and POSC 6956) and international politics POSC 6602-6799 and POSC 6958), or from a combination of graduate-level POSC courses in the areas of comparative and international politics and graduate-level cognate courses. With the approval of the department director of graduate studies, a student may receive up to 9 credit hours toward the master of arts degree in cognate courses. Cognate fields for the international affairs program include other areas of political science (American politics and political philosophy), as well as graduate courses taken outside of the Political Science Department. Examples of cognate courses outside of political science include, but are not limited to, graduate courses in Communication (COMM), Communication Studies (CMST), Economics (ECON) and History (HIST).

Research Papers

Students must complete at least two conference-quality research papers. These papers must deal with significant questions and demonstrate rigorous analytical and, as appropriate, methodological skills. The instructors in whose courses the papers are written must certify that the student has fulfilled this requirement. Specific details and certification forms are available from the department office.

Comprehensive Examinations

A candidate for the master of arts degree in international affairs must pass written and oral comprehensive examinations in the subfields of comparative politics and international politics. Students are encouraged to work with their adviser to select elective courses that provide appropriate coverage of comparative politics and international politics in preparation for the comprehensive examinations. The examinations normally are taken after the student has completed 24 credit hours of course work.

The written examination is based on comprehensive reading lists for each subfield, the student's course work, and sample questions provided in advance. The oral examination supplements the written examination and is based on the comprehensive reading lists and the student's course work. The examining committee is normally composed of three faculty members chosen by the department director of graduate studies in consultation with the student and his or her adviser. Details on the examinations, the reading lists and the sample questions are available from the department office.

Accelerated Bachelor's-Master's Degree Programs

The international affairs master's program has two accelerated (bachelor's-master's) degree options.

Option 1: The first option is for undergraduate students majoring in international affairs or political science. This option allows Marquette University students to earn both a bachelor of arts degree with a major in international affairs or in political science and a master of arts degree in international affairs in five years.

Students complete 9-12 hours of graduate credit in political science (POSC) courses during their senior undergraduate year. These graduate courses count for both the undergraduate and graduate degrees. Should a student be denied admission to the master's program, the courses are counted toward the undergraduate degree. Upon completion of the first term as a master's candidate, the student must petition the Graduate School to transfer the courses taken as an undergraduate to the master's degree. All remaining master's degree requirements may be completed during the subsequent summer, fall and spring terms.

Candidates for admission should have undergraduate junior status, have completed at least 3 upper-division political science (POSC) courses and should have a political science (POSC) course GPA of at least 3.500. Candidates for admission should submit transcripts and three letters of recommendation, but need not submit GRE scores. Candidates for admission to this program should notify the department director of graduate studies of their intentions.

Option 2: The second option is for undergraduate students who are not majoring in international affairs or political science. This option allows Marquette University students to earn both a bachelor of arts degree (with any undergraduate major) and a master of arts degree in international affairs in five years.

Students complete 9-12 hours of graduate credit in political science (POSC) courses during their senior undergraduate year. These graduate courses count for both the undergraduate and graduate degrees. Should a student be denied admission to the master's program, the courses are counted toward the undergraduate degree. Upon completion of the first term as a master's candidate, the student must petition the Graduate School to transfer the courses taken as an undergraduate to the master's degree. All remaining master's degree requirements may be completed during the subsequent summer, fall and spring terms.

Candidates for admission should have undergraduate junior status, have completed at least 2 upper-division political science (POSC) courses by the end of the first term of their junior year, and should have a political science (POSC) course GPA of at least 3.500. Candidates for admission should submit transcripts and three letters of recommendation, but need not submit GRE scores. At least one recommendation letter must
be from a faculty member of the Department of Political Science. Candidates for admission to this program should notify the department director of graduate studies of their intentions.
Languages, Literatures and Cultures (LLAC)

Chairperson: Eugenia Afinoguenova, Ph.D.
Languages, Literatures and Cultures website (https://www.marquette.edu/grad/programs-foreign-languages-and-literatures.php)

MORATORIUM ON ADMISSIONS FOR NEW STUDENTS

DEGREE OFFERED

Master of Arts, students are admitted under Plan B (non-thesis option) but may request Plan A (thesis option)

Program DescriptionS

The Department of Languages, Literatures and Cultures offers a master of arts degree in languages, literatures and cultures with a specialization in Spanish. An accelerated five-year bachelor's-master's degree program is offered, as well as the traditional two-year master of arts degree program. Both programs are designed to provide students with a broad background in Spanish language, literature and culture. The majority of the department's graduates have entered teaching careers, continued on to doctoral studies or secured a position in business, non-profit organizations or government. Students in the program form a small and relatively intimate group. Graduate seminars are kept small, averaging ten students, and students are given individual guidance throughout their course of study.

Prerequisites for Admission

Applicants for the master of arts (M.A.) program must have a bachelor's degree, or the equivalent international degree, from an accredited institution. Applicants with an undergraduate major in Spanish are expected to have completed 24 credit hours of course work beyond the intermediate level, including work in composition, conversation and advanced work in literature. Applicants with an undergraduate minor in Spanish are expected to have completed 15 credit hours of course work beyond the intermediate level, including a survey course in literature and a course in Spanish composition and conversation. Applicants must have an undergraduate grade point average equivalent of B or above (3.000 on a 4.000 scale). Native speakers of the language, who have an undergraduate degree in the humanities, are also eligible. Non-native speakers of the language, who have an undergraduate degree in the humanities with a minor in Spanish and who pass an online language proficiency test at the intermediate high level, are also eligible to apply.

Candidates for admission to the bachelor's-master's (B.A.-M.A.) program are required to consult with their Spanish academic adviser prior to submitting an application and must notify the chair of the Department of Languages, Literatures and Cultures of their intentions. Candidates should have undergraduate junior status and have completed at least 3 upper division Spanish courses (typically SPAN 3001 Advanced Communication in Spanish or SPAN 3005 Advanced Communication in Spanish for Heritage Speakers; SPAN 3300 Peoples and Cultures of Spain or SPAN 3310 Peoples and Cultures of Latin America; and SPAN 3500 Introduction to Literary Analysis in Spanish or SPAN 3505 Introduction to Literary Analysis in Spanish for Heritage and Native Speakers), and should also have a GPA of at least 3.000 in their Spanish major.

Application Deadlines

MASTER OF ARTS: No official deadline exists for the Spanish master of arts program; admission is on a rolling basis. However, applications submitted after the Graduate School's official financial aid deadlines are considered only as space permits, even if the applicant is not requesting financial aid. The deadlines for financial aid consideration are February 15 for the following fall term and November 15 for the following spring term.

ACCELERATED BACHELOR'S-MASTER'S DEGREE PROGRAM: Candidates for this program must submit their completed application to the Graduate School by February 1.

Application Requirements

Applicants to the M.A. program in Spanish must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. Three letters of recommendation.
4. A writing sample in Spanish. This can be a research paper from one of the applicant's undergraduate Spanish courses.
5. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

Applicants to the accelerated B.A.-M.A. program in Spanish must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.²
3. Three letters of recommendation.
4. A writing sample in Spanish. This can be a research paper from one of the applicant's undergraduate Spanish courses.
Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms is placed on the student’s record.

Languages, Literatures and Cultures Master’s Requirements

MORATORIUM ON ADMISSIONS FOR NEW STUDENTS

Specialization: Spanish

A master of arts degree student is admitted under Plan B (non-thesis option), but under special circumstances, and approval by the department chairperson and the Graduate School, may request to transfer to Plan A (thesis option). Plan B students are required to complete 30 credit hours of course work. A thesis is not required. Both Plan A and Plan B require the completion of 30 credit hours as well as written and oral comprehensive examinations.

MASTER OF ARTS DEGREE PROGRAM IN SPANISH

This is a two-year program designed for students who have already completed a bachelor’s degree, or an equivalent degree, from an accredited institution. Students in this program are often teachers pursuing graduate work, students wishing to continue studies and research in doctoral programs in such areas as Spanish linguistics, second language acquisition, literature and cultural studies.

Teaching assistantships are available to candidates on a competitive basis. Teaching assistants are required to take LLAC 5000 Teaching World Languages and Cultures and attend an orientation their first fall term in the program.

Students are admitted under Plan B (non-thesis option), but under special circumstances, and approval by the department chairperson and the Graduate School, may request to transfer to Plan A (thesis option). Plan B students are required to complete 30 credit hours of course work. A thesis is not required. Both Plan A and Plan B require the completion of 30 credit hours as well as written and oral comprehensive examinations.

Course Work

Students are required to complete a total of 30 credit hours of course work, with one 5000-level or 6000-level course in each of the areas of study listed below. At least half of the student’s work must be completed in courses numbered 6000 and above (15 credit hours). The remaining 15 credits are to be chosen in consultation with the director of graduate studies from the courses listed below in fulfillment of the areas and credit hour requirements for the master of arts degree. Once the area and the 6000-level course requirements have been met, the remaining courses may be chosen from the courses listed as electives below. As one of the elective courses, graduate teaching assistants in Spanish are required to complete LLAC 5000 Teaching World Languages and Cultures.

Literature and Culture Studies

- Early Peninsular (3 credit hours)
- Early Latin American (3 credit hours)
- Modern and Contemporary Peninsular Spanish (3 credit hours)
- Modern and Contemporary Latin American and U.S. Latino/a (3 credit hours)

Linguistics (3 credit hours)

Electives (15 credit hours)

Notes:

- A course may not be used to fulfill more than one area of study.
- Depending on the topic, SPAN 6931 Topics in Spanish Language, Culture and Literature may be repeated, and can be used to fulfill the appropriate area of study.
- All 5000-level courses require additional work at the graduate level, such as readings, writing assignments and oral presentations.
- A number of courses are listed in various areas. Fulfillment of a particular area or requirement is determined in consultation with the director of graduate studies.

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Comprehensive Examinations

Candidates for the master of arts degree must pass written and oral comprehensive examinations based on the master’s reading list to complete the program. Examinations are normally given in November and March. Exceptions must be approved by the director of graduate studies and the department chair.

The exam must be written in Spanish. The oral portion of the comprehensive examination takes place approximately one week following the written exam. The student is asked to respond to the questions on the written exam. The student’s overall performance is not to be evaluated until after this session.

The examining committee is composed of at least three faculty members chosen by the department chair in consultation with the Spanish faculty. Details on examinations, the master’s reading list and sample questions are available from the department office.

Reading Knowledge Courses

Reading Knowledge courses, preparatory to doctoral language examinations, are offered in the following languages:
Students registered for 6204 Reading Knowledge courses and wishing to withdraw must do so formally in the Graduate School office.

Graduate Second Language Proficiency Exam

Students taking the Second Language Proficiency Exam outside of the 6204 courses offered must register for the Graduate Second Language Proficiency Exam for the specific language (FREN 9831, GRMN 9831, etc.) through CheckMarq. Upon prior approval from the Department of Languages, Literatures and Cultures, students must register for FOLA 9830 for languages other than Arabic, Chinese, French, German, Greek, Italian, Latin or Spanish. Exams are offered once per term. A $100 processing fee is charged per exam.

ACCELERATED BACHELOR’S-MASTER’S DEGREE PROGRAM IN SPANISH

This five-year program is designed for the student majoring in Spanish who is interested in continuing the study of Spanish language, literature, culture and Spanish for the professions. The program is intended for students who are interested in studying an extra fifth year in order to concentrate on their language skills, cultural and literary competency, critical thinking skills, as well as their ability to use Spanish effectively in the fields of business, health, international relations and other professional fields.

The program allows students to earn both a bachelor of arts degree with a major in Spanish along with a master of arts degree in Spanish in five years instead of the six years that is normally required to earn both degrees. Students pursuing the accelerated degree program in Spanish complete the requirements for the undergraduate major in Spanish Language, Literature and Culture or Spanish for the Professions (30-34 credit hours) in addition to the master of arts degree in Spanish requirements (30 credit hours). Up to four courses (12 credit hours) of course work taken at the graduate level (SPAN 5000/6000) completed during the senior undergraduate year can count toward both the undergraduate and graduate degrees. The student’s fifth year consists of the completion of six graduate-level courses (18 credit hours) in fulfillment of the remaining master’s degree course and area requirements, as well as the master’s written and oral comprehensive examinations.

Upon completion of the first term as a master's candidate, the student must petition the Graduate School to transfer the SPAN 5000/6000 graduate-level courses taken as an undergraduate to the master's degree. Should a student be denied admission to the master's degree program, the graduate-level courses can be counted toward the requirements of the bachelor of arts degree major in Spanish.

Foreign Language Courses

French Courses

FREN 5110. Advanced Grammar and Written Expression in French. 3 cr. hrs.
Examines advanced structures, forms and style of the French language through contextual practice.

FREN 6204. French for Reading Knowledge. 3 cr. hrs.
Provides an overview of French grammar, reading comprehension of basic texts and translation practice for graduate students who plan to use French in their field of research. May only be taken for credit and may not be audited. Prereq: Enrolled in the Graduate School.

German Courses

GRMN 5110. Advanced German Grammar. 3 cr. hrs.
Grammatical structure of the German language in context with other linguistic areas.

GRMN 6204. German for Reading Knowledge. 3 cr. hrs.
Provides an overview of German grammar, reading comprehension of basic texts and translation practice for graduate students who plan to use German in their field of research. May only be taken for credit and may not be audited. Prereq: Enrolled in the Graduate School.

Greek Courses

GREK 5931. Topics in Greek Language, Culture and Literature. 1-3 cr. hrs.
Topics vary. Subject to be announced.

GREK 6204. Greek for Reading Knowledge. 3 cr. hrs.
Provides an overview of Classical and New Testament Greek grammar, reading comprehension of basic texts and translation practice for graduate students who plan to use Greek in their field of research. May only be taken for credit and may not be audited. Prereq: Enrolled in the Graduate School.

Italian Courses

ITAL 5931. Topics in Italian Language, Culture and Literature. 3 cr. hrs.
Topics vary. Subject to be announced. Prereq: Cons. of dept. ch.
Latin Courses

LATN 5100. Latin Prose Composition. 3 cr. hrs.

LATN 5115. Medieval Latin. 3 cr. hrs.
Reading, translation and analysis of a wide selection of Medieval Latin texts in prose and verse.

LATN 5505. Vergil: Aeneid. 3 cr. hrs.
Translation of selections from Books 1-12 of Vergil’s great national epic, the Aeneid, telling of the journey of Aeneas from fallen Troy to the shores of Italy. Background readings and discussions on Vergil’s literary debt to Homer, The Aeneid as a national epic and the Roman view of the Trojan legacy.

LATN 5510. Horace: Odes. 3 cr. hrs.
Reading, translation and analysis of selected lyric poems of Horace.

LATN 5515. Roman Elegiac Poetry. 3 cr. hrs.
Translations of selections from the love poems of Tibullus, Propertius and Ovid. Background readings and discussions on the origin and conventions of Roman elegiac poetry. Study of the elegiac couplet.

LATN 5520. Roman Comedy: Plautus and Terence. 3 cr. hrs.
Reading in Latin of several comedies from the works of Plautus and Terence, Rome’s surviving comic playwrights. Comedies translated may include Plautus’ Miles Gloriosus, Menaechmi and Mostellaria; and Terence’s Adelphi and Woman of Andros. Background readings and discussion on the origin and conventions of Roman comedy and the technicalities of staging a Roman comedy.

LATN 5525. Tacitus: Germania and Agricola. 3 cr. hrs.
Reading, translation and analysis of selections from the shorter works of Tacitus, with additional selections from the Annales.

LATN 5530. Cicero: Political and Philosophical Writings. 3 cr. hrs.
Reading, translation and analysis of selections from the speeches and dialogues of Cicero.

LATN 5550. Advanced Studies in Latin Poetry. 3 cr. hrs.
Reading, translation and analysis of a major Latin poet such as Catullus, Ovid or Juvenal.

LATN 5560. Advanced Studies in Latin Prose. 3 cr. hrs.
Readings translation and interpretation of a major Latin prose author such as Sallust, Livy, Seneca, Quintilian or St. Augustine.

LATN 5931. Topics in Latin Language, Culture and Literature. 1-3 cr. hrs.
Topics vary. Subject to be announced. Prereq: Cons. of dept. ch.

LATN 6204. Latin for Reading Knowledge. 3 cr. hrs.
Provides an overview of Latin grammar, reading comprehension of basic texts and translation practice for graduate students who plan to use Latin in their field of research. May only be taken for credit and may not be audited. Prereq: Enrolled in the Graduate School.

Spanish Courses

SPAN 5110. Structure of Spanish from a Linguistic Perspective. 3 cr. hrs.
Study of Spanish grammar from a linguistic framework with emphasis on the reasons why Spanish speakers make the structural choices they make. Focuses on the continued mastery of the most difficult points of Spanish grammar, also addressing grammatical variation. Provides an introduction to morphosyntax of Spanish and background for advanced courses in linguistics.

SPAN 5120. Spanish Phonetics. 3 cr. hrs.
Study of Spanish phonetics and phonological systems. The fundamental principles of phonetic analysis are introduced in a simple and concise manner in order to show how Spanish sounds are produced, how they fall into patterns and how they change in different environments. Emphasis on articulation, conditioned, dialectal variation, introductory training in phonetic transcription and the contrast between Spanish and English sound patterns.

SPAN 5130. Spanish Pragmatics: Language Use in Context. 3 cr. hrs.
Introduction to the field of Spanish pragmatics. Examines how communicative and sociocultural context affects language use. Topics include speech acts, politeness, humor, pragmatic variation in Latin America, Spain, as well as in the U.S., contrasts between Spanish and English pragmatics, and the acquisition of second language Spanish pragmatics. Special attention given to the development of explicit knowledge and understanding of difficult-to-acquire aspects of Spanish pragmatics through targeted language practice and awareness-raising activities.

SPAN 5140. Spanish Second Language Acquisition. 3 cr. hrs.
Introduction to second language acquisition. Students participate in a critical examination of second language acquisition theories and research; discussion of the role of individual differences in language learning; consideration of the effect of study abroad on language development; and discussion of the impact of instruction on language acquisition. Prereq: Cons. of dept. ch.

SPAN 5150. Spanish in the United States. 3 cr. hrs.
Descriptive and critical overview of the linguistic practices of different Spanish-speaking communities in the United States. Focuses on the characteristics of Spanish in contact with English, as well as the role that social factors like age, education, gender, race, nationality and socioeconomic status have on the use of the language. Also examines social issues such as language attitudes, bilingualism and the role of education. Prereq: Cons. of dept. ch.
SPAN 5310. Film and Society in Spanish. 3 cr. hrs.
Focuses on Spain and/or Latin America. Introduces the fundamentals of film history, film analysis and cultural analysis. Examines key elements of twentieth- and twenty-first-century cultures of the Spanish-speaking world: national and regional identity formation, trans-nationalism, territory, technology and modernization, gender, class and race.

SPAN 5320. Latin American and Latinx Contemporary Issues. 3 cr. hrs.
Focuses on the study and discussion of current topics, preoccupations, trends and issues pertaining to various Latin American and Latinx cultures in areas such as religion, educational reforms, ethnicity, race, identity, social stratification and economic development.

SPAN 5350. Transatlantic Literary Connections. 3 cr. hrs.
Study of literary texts by authors working on both sides of the Atlantic such as Asturias, Benavente, Lorca, Cela, Echegaray, García Márquez, Juan Ramón Jiménez, Mistral, Neruda, Paz and Vargas Llosa.

SPAN 5400. U.S. Latinx Literature. 3 cr. hrs.
Overview of U.S. Latinx literature from a historical perspective with an emphasis both on literary and cultural issues. Topics include the construction of identity, bilingualism, migration, exile and the relationship between writers and their communities. Readings in Spanish and English from a variety of literary and artistic genres, such as fiction, poetry, theater, autobiography and music.

SPAN 5450. Afro-Hispanic and Afro-Latinx Literatures and Cultures. 3 cr. hrs.
Exploration of the literary and cultural production of Afro-Hispanic and Afro-Latinx writers, with a particular focus on themes of slavery, race, class, identity, religion, migration and politics. Writers studied may include: Manzano, Gómez de Avellaneda, Villaverde, Guillén, Del Cabral, Palés Matos, Julia de Burgos, Mayra Santos Febres, Duncan, Brindis de Salas, Estupiñán Bass, Pirí Thomas and Junot Díaz.

SPAN 5500. Early Global Worlds: Al-Andalus to the Americas. 3 cr. hrs.
Overview of cultural contact and conflict in early Spain and/or the Americas with focus on transfers of skills and technologies, comparative social systems, religious syncretism and coexistence (Christianity, Islam, Judaism, indigenous religions) and their textual reflections. Texts include Poema del Mio Cid, Libro de Buen Amor, La Celestina, lyrical poetry and Popol Vuh.

SPAN 5505. Spanish Renaissance and Baroque. 3 cr. hrs.
Readings and analysis in literary historical context of selected, significant works and representative authors such as Lope de Vega, Calderón de la Barca, Tirso de Molina, Fray Luis de León, San Juan de la Cruz, Santa Teresa de Jesús, Garcilaso, La Celestina, Lazarillo de Tormes and Góngora.

SPAN 5510. Cervantes' Don Quijote. 3 cr. hrs.
In-depth study and analysis of Cervantes' masterpiece Don Quijote within the historical, political and cultural context of the Spanish Golden Age. Special attention to his life, his novelistic theories, his literary works and importance in the creation of the modern novel.

SPAN 5525. Spanish Enlightenment and Romanticism. 3 cr. hrs.
The major figures of the Enlightenment, Neoclassic, Romantic, Realist and Naturalist movements in Spain. Readings include Cadalso, Larra, Meléndez Valdés, Bécquer, Pardo Bazán, Clarín and Galdós.

SPAN 5550. Iberian Literatures: Avant-gardes to Postmodernism. 3 cr. hrs.
Prose and poetry of Spain after 1898 with emphasis on socio-political analysis and cultural pluralism. Readings include Pardo-Bazán, Unamuno, de la Cerna, Burgos, Delibes, Goytisolo and Vázquez Montalbán.

SPAN 5560. Hispanic Theater and Performance. 3 cr. hrs.
Studies the major formal and thematic developments in peninsular Spanish theater and/or Spanish American theater with emphasis on the works of such dramatists as Sor Juana, Marqués, Triana, García Lorca, Valle Inclán, and Sanchis Sinisterra, among others. Texts and authors vary per term.

SPAN 5600. Trends in Colonial Latin American Literature. 3 cr. hrs.
Overview of the major literary and cultural developments leading to the early formation of a Latin American body of literature. Explores major literary and cultural themes and trends within Latin America's colonial literary production. Texts explored include pre-Columbian mytho-historical narratives (e.g. Popol Vuh), letters and chronicles from the period of the conquest and colonization (e.g. Colón, Cortés, Las Casas), as well as literary texts from writers such as Inca Garcilaso de la Vega, Sor Juana and Mier.

SPAN 5610. Building Nations and Identities in Latin American Literature. 3 cr. hrs.
Overview of the development of literature in Latin America during the 18th and 19th centuries. Major movements studied include Romanticism, Realism and Naturalism. Topics of particular interest include the promotion of independence, the search for national identity and efforts to reform colonial practices such as slavery. Writers studied generally include Fernandez de Lizardi, Bello, Bolívar, Echeverría, Isaacs, Gómez de Avellaneda, Sarmiento and Martí.

SPAN 5615. Latin American Poetry, Music and Visual Arts. 3 cr. hrs.
Study of poetry and its relationship to music, painting, photography and digital media. Selections may include pre-Columbian and colonial, nineteenth-century and contemporary poets and avant-garde artists in Latin America. Writers and texts studied may include Visión de los vencidos, Ercilla, Sor Juana Inés de la Cruz, Avellaneda, Dario, Huidoboro, Storni, Vallejo, Pizarnik,聂尔达, Paz and Borges, among others. Prereq: Cons. of dept. ch.

SPAN 5620. Trends in Contemporary Latin American Literature. 3 cr. hrs.
Overview of major literary and cultural developments from the beginning of the twentieth century to the present. Emphasis is placed on understanding how Latin American writers respond to political, social and economic changes. Topics to be discussed include identity, feminism, social justice and globalization. Readings from a variety of genres by authors such as Martí, Rodo, Asturias, Borges, Castellanos, Parra, Fuentes, Puig, Poniatowska, Menchu, Bolano and Restrepo, among others. Prereq: Cons. of dept. ch.
SPAN 5640. Novels and Novelist in Latin America. 3 cr. hrs.
Focuses on the different trends, forms and contents of the Latin American novel as a genre, with emphasis on the works of such modern and cosmopolitan writers as Sabato, Fuentes, Carpentier, Ferré, Allende, Esquivel, Vargas Llosa and García Márquez.

SPAN 5670. Latin American Short Story. 3 cr. hrs.
Study of the evolution of the Latin American short story. Writers studied include Borges, Cortázar, Donoso, Bombal, Ferré, Lispector, Shua, Fuentes, García, Marqués, Quiroga, Rulfo and Valenzuela, among others. Prereq: Cons. of dept. ch.

SPAN 5705. Advanced Spanish for Business. 3 cr. hrs.
An advanced course designed to train students to deal successfully with a linguistic, geographic and commercial context with business components and practices closely related to the Hispanic business world of today.

SPAN 5715. Advanced Spanish for Health Care. 3 cr. hrs.
An advanced course in medical Spanish to train students who plan to work in a health-related area to communicate effectively in their field, with focus on interpretation and translation, analysis of professional literature and medical humanities.

SPAN 5931. Topics in Spanish Language, Culture and Literature. 1-3 cr. hrs.
Topics vary. Subject to be announced. Prereq: Cons. of dept. ch.

SPAN 6100. History of the Spanish Language. 3 cr. hrs.
Historical development of the Spanish language from its origins to the present in Spain and Spain-America.

SPAN 6110. Applied Linguistics. 3 cr. hrs.
Systematic study of language aimed at the application of descriptive, comparative and historical linguistics to the language teaching situation. Applied linguistics in phonology, morphology, syntax and contrastive analysis.

SPAN 6150. Strategies and Techniques of Written and Oral Communication. 3 cr. hrs.
Spanish syntactical and stylistic problems, plus advanced oral-aural work based on topical material of a literary, artistic or cultural nature.

SPAN 6204. Spanish for Reading Knowledge. 3 cr. hrs.
Provides an overview of Spanish grammar, reading comprehension of basic texts and translation practice for graduate students who plan to use Spanish in their field of research. May only be taken for credit and may not be audited. Prereq: Enrolled in the Graduate School.

SPAN 6300. Hispanic Cultural Studies. 3 cr. hrs.
Study of a given topic in Hispanic Cultural Studies, such as film, Spanish culture, Spanish-America culture, or U.S. Latino literature and culture. Topics vary. Subjects to be announced.

SPAN 6500. Medieval Spanish Literature. 3 cr. hrs.
Literary texts of Spain prior to the 16th century.

SPAN 6505. Studies in Spanish Renaissance Literature. 3 cr. hrs.
The major trends in Spanish literature during the 15th and 16th centuries.

SPAN 6525. Studies in Spanish Literature: Eighteenth and Nineteenth Centuries. 3 cr. hrs.
Significant trends and authors of the 18th and 19th centuries in Spain.

SPAN 6550. Studies in Spanish Literature: Twentieth and Twenty-First Centuries. 3 cr. hrs.
Contemporary Spanish literature from the Generation of 98 to the present.

SPAN 6575. Studies in Spanish Literature: Genre Study. 3 cr. hrs.
In-depth study of the development of a major genre in Spanish literature, such as theatre, short story, poetry or essay. The particular genre varies.

SPAN 6600. Studies in Spanish-American Literature: Pre-Columbian to Baroque Period. 3 cr. hrs.
Study of major trends in Spanish-American literature since the Pre-Columbian period, with particular emphasis on the Cronicas and baroque poetry.

Study of major trends and genres in Spanish-American during the 18th and 19th centuries, with particular emphasis on Romanticism, Realism, Naturalism and Modernismo. Writers studied generally include Fernández de Lizardi, Bello, Bolívar, Echeverría, Isaacs, Gómez de Avellaneda, Sarmiento, Martí and Dario, among others.

SPAN 6650. Studies in Spanish-American Literature: Twentieth and Twenty-First Centuries. 3 cr. hrs.
Study of major trends in Spanish-American literature in the 20th and 21st centuries. Particular emphasis on the representative poets, dramatists and prose writers of the modern period.

SPAN 6675. Studies in Spanish-American Literature: Genre Study. 3 cr. hrs.
Study of the development of a major genre in Spanish-American literature, such as theatre, short study, poetry or essay. The particular genre varies.

SPAN 6931. Topics in Spanish Language, Culture and Literature. 3 cr. hrs.
Topics vary. Subject to be announced.

SPAN 6995. Independent Study in Spanish. 1-3 cr. hrs.
Independent study with a faculty member centered on a particular topic in Spanish. Prereq: Cons. of dept. ch.

SPAN 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
SPAN 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

SPAN 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

SPAN 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

SPAN 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

SPAN 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Mathematics for Secondary School Teachers (MSST)

Chairperson: Rebecca L. Sanders, Ph.D.
Program Director: Marta T. Magiera, Ph.D.

Degree Offered
Master of Science, students are admitted under Plan B (non-thesis option) but Plan A (thesis option) is also offered

Program Description
The mathematics for secondary school teachers (MSST) program, offered by the Department of Mathematical and Statistical Sciences, is designed for students who wish to deepen their understanding of mathematics and mathematics education beyond the bachelor's level. While the program is designed for teachers, it is also open to others who want to deepen their understanding of post-baccalaureate mathematics and mathematics education. Students may also choose core courses from the computational mathematical and statistical sciences program. This program does not prepare for doctoral studies in pure mathematics.

Prerequisites for Admission
Applicants should have an undergraduate degree. Students whose previous mathematics course work was not at least equivalent to a minor in mathematics may be required to complete some prerequisite undergraduate courses before beginning master's courses.

Application Deadline
Applications are accepted on an ongoing basis. Applicants should allow at least a month for the application process to be completed once all application materials have been submitted.

Application Requirements
Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.
3. Three letters of recommendation addressing the applicant's academic qualifications for graduate study in the intended program.
4. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms is placed on the student's record.

Mathematics for Secondary School Teachers Master's Requirements
A master's student must complete a 30-credit plan of study prepared in cooperation with an adviser and approved by the Graduate Committee of the Department of Mathematical and Statistical Sciences.

A master's student is admitted to the non-thesis program (Plan B). A formal request to pursue a thesis (Plan A) must be approved by the department's Graduate Committee and the Graduate School.

Plan A Option
All Plan A students in the mathematics for secondary school teachers must complete a minimum of 24 credit hours of course work. In addition, students must complete six credit hours of MSSC 6999 Master's Thesis and submit a thesis that must be an original contribution to the student's field of study. A public defense of the thesis is required.

Required courses
- MSSC 5020 The Teaching of Mathematics 3
- MSSC 6953 Seminar in Mathematics Curriculum Development and Material 1 3

Elective courses
- MSSC 5030 Concepts in Geometry and Calculus from an Advanced Standpoint
- MSSC 5040 Concepts in High School Algebra and Number Theory from an Advanced Standpoint
- MSSC 5120 Abstract Algebra 1
- MSSC 5121 Abstract Algebra 2

Elective courses (18 credits)
### Plan B Option

All Plan B students in the mathematics for secondary school teachers must complete a minimum of 30 credit hours of course work. In addition, students must complete a non-credit essay that reflects the student's ability to synthesize source materials relating to a particular area of research or professional practice. A public oral presentation of the essay is required.

#### Required courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MSSC 5020</td>
<td>The Teaching of Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6953</td>
<td>Seminar in Mathematics Curriculum Development and Material 1</td>
<td>3</td>
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#### Elective courses

<table>
<thead>
<tr>
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<th>Credit Hours</th>
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<tbody>
<tr>
<td>MSSC 5030</td>
<td>Concepts in Geometry and Calculus from an Advanced Standpoint</td>
<td>3</td>
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<tr>
<td>MSSC 5040</td>
<td>Concepts in High School Algebra and Number Theory from an Advanced Standpoint</td>
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<tr>
<td>MSSC 5120</td>
<td>Abstract Algebra 1</td>
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<tr>
<td>MSSC 5121</td>
<td>Abstract Algebra 2</td>
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</tr>
<tr>
<td>MSSC 5200</td>
<td>Intermediate Analysis 1</td>
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<td>MSSC 5210</td>
<td>Complex Variables</td>
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<td>MSSC 5310</td>
<td>History of Mathematical Ideas</td>
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<tr>
<td>MSSC 5320</td>
<td>Theory of Numbers</td>
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<tr>
<td>MSSC 5420</td>
<td>Foundations of Geometry</td>
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<td>MSSC 5540</td>
<td>Numerical Analysis</td>
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<td>MSSC 5630</td>
<td>Mathematical Modeling and Analysis</td>
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<td>MSSC 5650</td>
<td>Theory of Optimization</td>
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<td>MSSC 5670</td>
<td>Applied Combinatorial Mathematics</td>
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<td>MSSC 5700</td>
<td>Theory of Probability</td>
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<td>MSSC 5720</td>
<td>Statistical Methods</td>
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<td>MSSC 5740</td>
<td>Biostatistical Methods and Models</td>
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<td>MSSC 5760</td>
<td>Time Series Analysis</td>
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<td>MSSC 5780</td>
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<td>MSSC 5710</td>
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<tr>
<td>MSSC 6010</td>
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<tr>
<td>MSSC 6020</td>
<td>Statistical Simulation</td>
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<tr>
<td>MSSC 6030</td>
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<td>MSSC 6040</td>
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<td>MSSC 6240</td>
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<td>MSSC 6250</td>
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<tr>
<td>COSC 6931</td>
<td>Topics in Computer Science (Topic: Scientific Computing)</td>
<td>3</td>
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</tbody>
</table>

Additional electives within and outside of department as approved by the program director.
MSSC 5780  Regression Analysis
MSSC 6010  Computational Probability
MSSC 6020  Statistical Simulation
MSSC 6030  Applied Mathematical Analysis
MSSC 6040  Applied Linear Algebra
MSSC 6240  Design and Analysis of Scientific Experiments
MSSC 6250  Statistical Machine Learning
COSC 6931  Topics in Computer Science (Topic: Scientific Computing)

Additional electives within and outside department as approved by the program director

Total Credit Hours 30

Courses

**MSSC 5020. The Teaching of Mathematics. 3 cr. hrs.**
Historical background, problems, curricular materials, and teaching procedures in the various areas of mathematics pertinent to the needs of a secondary school mathematics teacher. In addition, a three-hour time block on one day each week between 8 a.m. and 3 p.m. must be kept free for clinical experience.

**MSSC 5030. Concepts in Geometry and Calculus from an Advanced Standpoint. 3 cr. hrs.**
Topics chosen primarily from geometry and calculus, taught from an advanced standpoint to enrich and deepen the student's understanding. Emphasis on alternative approaches, generalizations, historical contexts and connections with prior mathematical studies.

**MSSC 5040. Concepts in High School Algebra and Number Theory from an Advanced Standpoint. 3 cr. hrs.**
Topics closely related to the high school mathematics curriculum, chosen primarily from algebra and number theory, taught from an advanced standpoint to enrich and deepen the student's understanding. Emphasis on alternative approaches, generalizations, historical contexts and connections with prior mathematical studies.

**MSSC 5120. Abstract Algebra 1. 3 cr. hrs.**
Sets, mappings, operations on sets, relations and partitions. A postulational approach to algebraic systems including semigroups, groups, rings and fields. Homomorphisms of groups and rings, number systems, polynomial rings.

**MSSC 5121. Abstract Algebra 2. 3 cr. hrs.**
A continuation of MSSC 5120 with emphasis on groups, rings, fields and modules.

**MSSC 5200. Intermediate Analysis 1. 3 cr. hrs.**
Limits and continuity, differentiability, Riemann integration. Topology of N-dimensional spaces.

**MSSC 5201. Intermediate Analysis 2. 3 cr. hrs.**
Transformations of N-spaces, line and surface integrals, sequences and series, uniform convergence.

**MSSC 5210. Complex Variables. 3 cr. hrs.**
Complex numbers, analytic functions, differentiation, series expansion, line integrals, singularities and residues.

**MSSC 5310. History of Mathematical Ideas. 3 cr. hrs.**
Topics selected from the following: development of the number system (need for irrational and complex numbers); development of geometry including the effects of the discovery of non-Euclidean geometry; limit concept; need for axiomatic structures; twentieth-century problems. Current mathematics research and place of mathematics in today's world.

**MSSC 5320. Theory of Numbers. 3 cr. hrs.**
Integers, unique factorization theorems, arithmetic functions, theory of congruences, quadratic residues, partition theory.

**MSSC 5420. Foundations of Geometry. 3 cr. hrs.**
Modern postulational development of Euclidean and non-Euclidean geometries.

**MSSC 5450. Topology. 3 cr. hrs.**
Topological spaces, mappings, metric spaces, product and quotient spaces. Separation axioms, compactness, local compactness and connectedness.

**MSSC 5500. Theory of Differential Equations. 3 cr. hrs.**
Existence and uniqueness theorems, linear and non-linear systems, numerical techniques, stability.

**MSSC 5510. Elementary Partial Differential Equations. 3 cr. hrs.**
Fourier series, method of separation of variables, eigenfunction expansions, application of eigenfunctions to partial differential equations, Green's functions and transform methods.

**MSSC 5540. Numerical Analysis. 3 cr. hrs.**
Numerical solution of algebraic and transcendental equations, linear systems and the algebraic eigenvalue problem, interpolation and approximation, numerical integration, difference equations, numerical solution of differential equations and finite difference methods.

**MSSC 5630. Mathematical Modeling and Analysis. 3 cr. hrs.**
Construction and analysis of mathematical models from biological, behavioral and physical sciences.
MSSC 5650. Theory of Optimization. 3 cr. hrs.
Fundamental theorems describing the solution of linear programs and matrix games. Minimax, duality, saddle point property, simplex and specialized algorithms. Zero sum games, transportation and assignment problems, applications to economics.

MSSC 5670. Applied Combinatorial Mathematics. 3 cr. hrs.
Permutations and combinations, recurrence relations, inclusions and exclusion, Polya's theory of counting, graph theory, transport networks, matching theory.

MSSC 5700. Theory of Probability. 3 cr. hrs.
Random variables, distributions, moment generating functions of random variables, various derived probabilistic models and applications.

MSSC 5710. Mathematical Statistics. 3 cr. hrs.
Sampling theory and distributions, estimation and hypothesis testing, regression, correlation, analysis of variance, non-parametric methods, Bayesian statistics.

MSSC 5720. Statistical Methods. 3 cr. hrs.
Probability, discrete and continuous distributions. Treatment of data, point and interval estimation, hypothesis testing. Large and small sample method, regression, non-parametric methods. An introduction to the basic understanding of statistical methods. Applications-oriented.

MSSC 5740. Biostatistical Methods and Models. 3 cr. hrs.
Introduction to the statistics of life science and the use of mathematical models in biology. Data analysis and presentation, regression, analysis of variance, correlation, parameter estimation and curve fitting. Biological sequence analysis, discrete and continuous mathematical models and simulation.

MSSC 5760. Time Series Analysis. 3 cr. hrs.

MSSC 5780. Regression Analysis. 3 cr. hrs.
Basic concepts of statistical inference, simple linear regression, multiple linear regression, diagnostic analysis, selecting the best equation, stepwise methods, nonlinear regression, use of statistical software.

MSSC 5931. Topics in Mathematical or Statistical Sciences. 1-3 cr. hrs.
Topics selected from one of the various branches of mathematics or statistics. Specific topics to be announced in the Schedule of Classes.

MSSC 6010. Computational Probability. 3 cr. hrs.
Foundations of probability for modeling random processes and Bayesian approaches, including: counting techniques, probability of events, random variables, distribution functions, probability functions, probability density functions, expectation, moments, moment generating functions, special discrete and continuous distributions, sampling distributions, prior and posterior distributions, Law of Large Numbers, Central Limit Theorem, Bayesian paradigm. Prereq: Three semesters of mathematics beyond calculus and MATH 4720 or equiv.

MSSC 6020. Statistical Simulation. 3 cr. hrs.

MSSC 6030. Applied Mathematical Analysis. 3 cr. hrs.
Foundational topics in analysis considered from a modeling and numerical viewpoint. Emphasizes techniques of proof and approximation, and their role in the solution of problems arising in applications. Prereq: Multivariable calculus and linear algebra.

MSSC 6040. Applied Linear Algebra. 3 cr. hrs.
Foundational linear algebra considered from a numerical viewpoint. Focuses on solutions of linear systems of equations, eigenvalues and eigenvectors, and transformations. Emphasizes and illustrates proof and numerical implementation using problems arising in applications. Prereq: Multivariable calculus and linear algebra.

MSSC 6090. Research Methods/Professional Development. 1 cr. hr.
Designed to introduce the process of research and communication of research in the mathematical and statistical sciences, including presentation and publication of research, preparation of grant proposals, and ethical considerations. May be repeated.

MSSC 6110. Applied Discrete Mathematics. 3 cr. hrs.
Applied discrete mathematics for the mathematics, engineering and computer science graduate student. Emphasis on graph theory and counting problems that serve as a foundation for research areas in the second term. Theory and applications are covered for topics including trees, graph coloring, chromatic polynomials, generating functions, recurrence relations, distinct colorings and Polya's Theorem. Prereq: COSC 1020 and MATH 1450 or equiv.; MATH 1451 and MATH 2100 or equiv.

MSSC 6120. Optimization. 3 cr. hrs.

MSSC 6130. Dynamical Systems. 3 cr. hrs.
Theory of discrete and continuous dynamical systems. Periodic solutions, bifurcations, chaotic systems, attractors, fractal dimension and simulation of these systems. Prereq: MATH 4200 or equiv.
MSSC 6210. Theory of Statistics. 3 cr. hrs.
Brief review of sampling distributions, Central Limit Theorem and Law of Large Numbers. Estimation, testing hypotheses, regression and correlation analysis, non-parametric methods. Prereq: MATH 4720 or equiv.

MSSC 6220. Analysis of Variance and Covariance. 3 cr. hrs.

MSSC 6230. Multivariate Statistical Analysis. 3 cr. hrs.
Basic properties of random vectors, multivariate normal distribution, estimations of mean vector and covariance matrix, Wishart distribution, hypothesis testing, Hotelling's T2, multivariate analysis of variance, principal component analysis, factor analysis, canonical correlation analysis, classification and discriminant analysis. Prereq: MATH 3100 and MATH 4710.

MSSC 6240. Design and Analysis of Scientific Experiments. 3 cr. hrs.
Single factor, two-factor and multi-factor designs and their analysis, Latin-square design and its analysis; power analysis and sample size selection; 2^k factorial designs; confounding/blocking designs; orthogonality and orthogonal contrasts; 3^k factorial designs; response surface methodology. Prereq: A course in statistical methods, such as MATH 4720 or equiv.

MSSC 6250. Statistical Machine Learning. 3 cr. hrs.
Multivariate data and exploratory analysis, random vector and multivariate normal distribution, multivariate linear regression, principal component and other dimensional reduction techniques, linear discriminant analysis, recursive partition and tree-based methods including classification tree and regression tree, cluster analysis, neural network and support vector machine. Prereq: A course in statistical methods, such as MATH 4720, and a course in linear algebra, such as MATH 3100, MATH 4780 or equiv., cons. of instr.

MSSC 6410. Real Analysis. 3 cr. hrs.
Involves study of algebraic structures of real analysis, function spaces, introduction to linear operators, measure and integration theory, convergence theorems, limits, continuity and derivatives. Prereq: MATH 4200.

MSSC 6420. Algebra. 3 cr. hrs.
Studies groups, rings, fields and vector spaces including Sylow's theorems, field of quotients of an integral domain, structure of finitely generated modules over a principal ideal domain, Galois theory of equations, ordered fields and classical groups. Prereq: MATH 4120 or equiv.

MSSC 6430. Logic and Set Theory. 3 cr. hrs.
Naive set theory, first-order logic, elementary model theory, non-standard analysis, Godel's incompleteness theorems for elementary arithmetic, axioms for set theory, ordinal and cardinal arithmetic, the continuum hypothesis, methods of inner models and forcing for proving consistency and independence results. Prereq: MATH 4120 or equiv.

MSSC 6440. Topology. 3 cr. hrs.
Metric spaces, fundamental topology notions, subspace topology, product spaces, quotient spaces, separation axioms, Tietze's theorem, compactness, metrization, uniform spaces, function spaces, homotopy relation, fundamental group, computing manifold groups. Prereq: MATH 4200 or equiv.

MSSC 6770. Innovations in Secondary Mathematics: Meeting the NCTM Standards. 3 cr. hrs.
Online course designed for teachers of secondary mathematics. Emphasizes relevant NCTM standards through discussion, projects, and implementation in a secondary mathematics classroom. Mathematics content amplifies and extends selected topics of secondary mathematics. Topics vary. Credit may be earned multiple times if completed under a different topic. Prereq: Cons. of dept. ch.; one term of calculus and access to an algebra or geometry class of secondary students; or cons. of course coordinator; admitted to MSST or College of Education.

MSSC 6931. Topics in Mathematical or Statistical Sciences. 3 cr. hrs.
Topics vary. Multiple enrollments allowed under different topics.

MSSC 6953. Seminar in Mathematics Curriculum Development and Material 1. 3 cr. hrs.
The historical evolution of mathematics learning theories and research-generated conceptions of mathematics learning; comparisons of various learning theories and their impact on research in mathematics learning; implications of research and learning theories on curriculum development; implications of mathematics learning research/theories on the teaching and learning of mathematics. Prereq: Admitted to MSST or College of Education.

MSSC 6954. Seminar in Mathematics Curriculum Development and Material 2. 3 cr. hrs.
Philosophy of education with particular attention to mathematics education; development by students of useful curricula in the form of teaching units, evaluation materials, and student and teacher bibliographies for specific topics, grade levels, and ability groups; aspects of supervision as related to the role of department chairperson. Prereq: MSSC 6953; admitted to MSST or College of Education.

MSSC 6960. Seminar in Mathematical or Statistical Sciences. 1-3 cr. hrs.
Topics selected from one of the various branches of mathematics or statistics. Specific topics are announced in the Schedule of Classes.

MSSC 6974. Practicum for Research in Mathematical or Statistical Sciences. 1-3 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

MSSC 6975. Practicum for Statistical Consulting. 3 cr. hrs.
Provides students with the opportunity to explore real-world examples of data analysis as a statistical consultant. Prereq: 3.000 MU GPA; completed at least 12 credit hours; cons. of the applied statistics dir. of graduate studies; or cons. of dept. ch.

MSSC 6995. Independent Study in Mathematical or Statistical Sciences. 1-5 cr. hrs.
Investigations in selected areas of mathematics or statistics. Prereq: Cons. of instr. and cons. of dept. ch.
MSSC 6998. Professional Project in Mathematical or Statistical Sciences. 0 cr. hrs.
SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

MSSC 8995. Independent Study in Mathematical or Statistical Sciences. 1-3 cr. hrs.
In-depth research on a topic or subject matter usually not offered in the established curriculum with faculty and independent of the classroom setting.
Prereq: Cons. of instr. and cons. of dept. ch.

MSSC 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

MSSC 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

MSSC 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Neuroscience (NRSC)

Program Director: SuJean Choi, Ph.D.
Neuroscience Graduate Program website (http://www.marquette.edu/grad/programs-neuroscience.php)

DEGREE OFFERED
Doctor of Philosophy

Educational Goals and Student Learning Outcomes
Upon completion of the neuroscience doctorate program, a student is able to:

1. Demonstrate an in-depth mastery of advanced interdisciplinary concepts in the neurosciences.
2. Demonstrate independent scientific reasoning.
3. Design and execute original research in an area of neuroscience specialization.
4. Demonstrate effective oral communication of interdisciplinary neuroscience concepts.

PROGRAM DESCRIPTION
Neuroscience is the study of the structure and function of the brain and nervous system and is currently one of the fastest growing areas in science education and research. The graduate program in neuroscience involves, at a minimum, faculty from the Departments of Biological Sciences; Biomedical Engineering; Biomedical Sciences; Mathematics, Statistics and Computer Science; Philosophy; Physical Therapy-Exercise Science; and Psychology. It is designed to provide students with research training and didactic course work that includes a broad foundation of neuroscience that can then be complemented with specialized courses within subfields.

PREREQUISITES FOR ADMISSION
Applicants to the neuroscience program must hold a baccalaureate degree, or its academic equivalent, from a college or university of recognized standing. The undergraduate background must be appropriate to the chosen course of study. Applicants are expected to have completed a bachelor's degree, which includes course work in one or more of the following: science, technology, engineering and mathematics. Applicants must have a minimum cumulative grade point average of 3.000 (on a scale of 4.000) in their undergraduate course work.

Application Deadline
Applications are due to the Graduate School by December 1 for the following fall term.

APPLICATION REQUIREMENTS
Applicants must submit, directly to the Marquette University Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.
3. A statement of professional goals and aspirations. Accelerated Degree Program (ADP) applicants must also describe any prior research experience.
4. Three letters of recommendation that give evidence of the applicant's scholarly promise.
5. GRE scores (General Test is required, Subject Test is recommended. Waived for ADP applicants).
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

The recruitment committee reviews applications and selects a sub-group for phone interviews. After phone interviews are complete, the applications are selected for on-campus interviews. All applicants are notified of the committee's decision.

1 Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student's record.

Neuroscience Doctoral Requirements
Specializations: Behavioral and Cognitive Neuroscience; Cellular and Molecular Neuroscience; Computational, Neurorehabilitation and Neuroimaging Neuroscience

Neuroscience is the interdisciplinary study of the function of the nervous system, encompassing a broad spectrum of approaches from cellular and molecular function to anatomical circuitry to behavior, disorders and treatments. The neuroscience doctoral program is designed with interdisciplinary research training and curriculum, research writing and analysis skills toward preparing students for doctoral-level interdisciplinary career opportunities in the growing arena of neuroscience research and industry. The program involves faculty from the Departments of Biological Sciences; Biomedical
Engineering; Biomedical Sciences; Physical Therapy-Exercise Science; Mathematics, Statistics and Computer Science; Philosophy; and Psychology. The program is designed to provide students with research training and didactic course work that includes a broad foundation in neuroscience that can then be complemented with specialized courses within subfields.

Required courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BISC 5140</td>
<td>Functional Neuroanatomy</td>
<td>3</td>
</tr>
<tr>
<td>NRSC/BISC 8001</td>
<td>Neuroscience Foundations 1</td>
<td>4</td>
</tr>
<tr>
<td>NRSC/BISC 8002</td>
<td>Neuroscience Foundations 2</td>
<td>4</td>
</tr>
<tr>
<td>NRSC/BISC 8003</td>
<td>Individual Development Plan</td>
<td>1</td>
</tr>
<tr>
<td>NRSC/BISC 8004</td>
<td>Science Writing and Ethics 1 (or equivalent)</td>
<td>1</td>
</tr>
<tr>
<td>NRSC/BISC 8005</td>
<td>Science Writing and Ethics 2 (or equivalent)</td>
<td>1</td>
</tr>
<tr>
<td>NRSC/BISC 8096</td>
<td>First Year Lab Rotations (taken three times at 1 cr. each)</td>
<td>3</td>
</tr>
</tbody>
</table>

Graduate statistics course from BIOL, BISC, MSCS, PSYC or another course as approved by the director of graduate studies. 3-4

A minimum of 12 credit hours from within the declared specialization. 2

NRSC 8999 Doctoral Dissertation
12

Total Credit Hours
44-45

1 Taking an equivalent course, such as PSYC 8125 Advanced Research Methods or MSSC 6090 Research Methods/Professional Development (repeated twice) may increase the overall credit total.

2 Depending on the specialization, 2-3 credits are taken at the 6000 or 8000 level, and a maximum of 3 credits may be taken at the 5000 level. One final course (at least 2-3 credits) may be chosen from the courses and seminars offered in any of the specializations or other doctoral level courses offered by participating departments (e.g., Biological Sciences; Biomedical Engineering; Biomedical Sciences; Physical Therapy-Exercise Science; Mathematics, Statistics and Computer Science; Philosophy; and Psychology), as appropriate to individual training plans.

Specializations

BEHAVIORAL AND COGNITIVE NEUROSCIENCE

Students in this specialization acquire a foundational background in behavioral and cognitive processes and their neuroanatomical and neurophysiological foundations. Areas of focus include: perception, attention, learning, memory, executive functioning, social and affective functioning, reward, stress, mental health and disorders, development, aging and dementia.

Behavioral and cognitive neuroscience students must complete a minimum of 12 credit hours from the following list:

Required course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC 8740</td>
<td>Foundations and Processes of Human Cognition</td>
<td>3</td>
</tr>
<tr>
<td>or PSYC 8780</td>
<td>Biological Bases of Behavior</td>
<td></td>
</tr>
</tbody>
</table>

Choose three of the following (may not repeat). At least two courses must be from the PHIL or PSYC courses below: 9

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC 8102</td>
<td>Advanced Statistics and Design 2 (or other approved advanced/applied statistics course)</td>
<td></td>
</tr>
<tr>
<td>PSYC 8740</td>
<td>Foundations and Processes of Human Cognition</td>
<td></td>
</tr>
<tr>
<td>PSYC 8780</td>
<td>Biological Bases of Behavior</td>
<td></td>
</tr>
<tr>
<td>PHIL 6440</td>
<td>Philosophy of Science</td>
<td></td>
</tr>
<tr>
<td>PHIL 6450</td>
<td>Philosophy of Mind</td>
<td></td>
</tr>
<tr>
<td>PHIL 6470</td>
<td>Problems in Metaphysics</td>
<td></td>
</tr>
<tr>
<td>PHIL 6959</td>
<td>Seminar in Philosophy (when topic approved by director)</td>
<td></td>
</tr>
</tbody>
</table>

Alternative course/seminar with director approval.

Cellular and Molecular Neuroscience

Students in this specialization acquire a foundational background in core neuroscience concepts including a strong understanding of both neuronal and non-neuronal cells of the nervous system, electrical/chemical mechanisms of synaptic signaling, structure/function of the nervous system, and behavioral, physiological, and cognitive outputs of the healthy and dysfunctional nervous system. Areas of focus include: fundamental processes underlying drug and alcohol addiction, stress, depression, schizophrenia, learning and memory, obesity and eating disorders, neurodegeneration, circadian biology, ion channel function and spinal cord injury.

Cellular and molecular neuroscience students must complete a minimum of 12 credit hours from the following list:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 8101</td>
<td>Protein Structure and Function</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 8102</td>
<td>Biochemistry and Function of Nucleic Acids</td>
<td>2</td>
</tr>
</tbody>
</table>
Computational, Neurorehabilitation and Neuroimaging Neuroscience

Computational, neurorehabilitation and neuroimaging neuroscience students must complete a minimum of 12 credit hours from within focus area 1, 2 or 3. See course lists for each focus, below:

**Computational**

Choose at least 12 credit hours for the Computational focus area:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSSC 5760</td>
<td>Time Series Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 5780</td>
<td>Regression Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6010</td>
<td>Computational Probability</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6020</td>
<td>Statistical Simulation</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6230</td>
<td>Multivariate Statistical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MSSC 6240</td>
<td>Design and Analysis of Scientific Experiments</td>
<td>3</td>
</tr>
</tbody>
</table>

**Neurorehabilitation**

Complete the following 12 credit hours for the Neurorehabilitation focus area:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXRS 6001</td>
<td>Applied and Rehabilitative Systems Physiology</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6030</td>
<td>Advanced Principles and Instrumentation in Biomechanics</td>
<td>3</td>
</tr>
<tr>
<td>EXRS 6201</td>
<td>Neurophysiological Principles in Disease and Rehabilitation</td>
<td>3</td>
</tr>
</tbody>
</table>

Alternative course/seminar with director approval.
Neuroimaging

Choose at least 12 credit hours for the Neuroimaging/Neuroengineering focus area:

<table>
<thead>
<tr>
<th>Neural Systems courses</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BIEN 5600 Neural Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BIEN 6600 Neuromotor Control</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signal Processing courses</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BIEN 6200 Biomedical Signal Processing</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BIEN 6210 Advanced Biomedical Signal Processing</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BIEN 6220 Multidimensional Biomedical Time Series Analysis</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modeling courses</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BIEN 5230 Intelligent Biosystems</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BIEN 5710 Analysis of Physiological Models</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Imaging courses</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BIEN 5500 Medical Imaging Physics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BIEN 5510 Image Processing for the Biomedical Sciences</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BIEN 6500 Mathematics of Medical Imaging</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Alternative course/seminar with director approval.

ACCELERATED BACHELOR'S-Doctoral DEGREE PROGRAM

Beginning fall 2021, the Graduate School will offer a combined bachelor’s-doctoral program available to outstanding Marquette University biomedical sciences undergraduate students. This program enables students to complete their undergraduate degree within the first year of the neuroscience graduate program, allowing them to complete their doctorate in less time than traditional graduate students. Biomedical sciences undergraduate students can apply for early admission to the neuroscience doctoral program in the first term of their junior year. The cellular and molecular neuroscience specialization must be chosen. Students may request permission to move to another specialization, though requests are not guaranteed.

Students accepted into this program are eligible to enroll in up to 14 credits (7-8 credits/semester) of graduate neuroscience courses in their senior year that can be used to fulfill both undergraduate and graduate degree requirements. Interested students should contact their adviser early in their undergraduate career to plan the curriculum for the biomedical sciences major accordingly. Students must submit an application to the Graduate School, indicate their interest in the accelerated degree program and meet all other admission criteria as stated in the Application Requirements section. If accepted to the ADP, students must notify the Graduate School upon successful completion of bachelor’s degree, and their admission as a full-time graduate student is then activated.

Courses

NRSC 8001. Neuroscience Foundations 1. 4 cr. hrs.
Comprehensive survey of nervous system function at the cellular level including biochemical synthesis and degradation, receptors and intracellular signaling pathways. Same as BISC 8001; credit is not awarded for both. Prereq: Admitted to NRSC program or cons. of instr.

NRSC 8002. Neuroscience Foundations 2. 4 cr. hrs.
Comprehensive survey of nervous system function at the systems and behavioral level and includes motor, sensory and regulatory systems, imaging, cognitive and computational modeling. Same as BISC 8002; credit is not awarded for both. Prereq: Admitted to NRSC program or cons. of instr.

NRSC 8003. Individual Development Plan. 1 cr. hr.
Guidance of students toward identifying their current interests to facilitate future career paths as well as develop a graduate career plan based on necessary skills and expertise. Same as BISC 8003; credit is not awarded for both. Prereq: Admitted to NRSC program or cons. of instr.

NRSC 8004. Science Writing and Ethics 1. 1 cr. hr.
An introduction of scientific writing skills necessary for a successful career in science. Same as BISC 8004; credit is not awarded for both. Prereq: BISC 8003 or NRSC 8003.

NRSC 8005. Science Writing and Ethics 2. 1 cr. hr.
Advanced writing skills necessary for grant writing. Same as BISC 8005; credit is not awarded for both. Prereq: BISC 8004 or NRSC 8004.

NRSC 8096. First Year Lab Rotations. 1 cr. hr.
Introductory lab rotations for first year graduate students based on mutual preferences of the student and faculty member. May include lab group meetings, literature search, bench work, presentation of findings and/or research plans to lab members. Same as BISC 8096; credit is not awarded for both. Prereq: Admitted to NRSC program or cons. of instr.

NRSC 8931. Topics in Neuroscience. 1-3 cr. hrs.
Subject matter varies as determined by needs of neuroscience graduate students. May be repeated, as subject matter changes. Same as BISC 8931; credit is not awarded for both. Prereq: Admitted to NRSC program or cons. of instr.
NRSC 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

NRSC 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

NRSC 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of program dir.

NRSC 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of program dir.

NRSC 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of program dir.

NRSC 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of program dir.

NRSC 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of program dir.

NRSC 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of program dir.

NRSC 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of program dir.

NRSC 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of program dir.

NRSC 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of program dir.
Nursing (NURS)

Dean: Janet Krejci, Ph.D., R.N.
College of Nursing website (http://www.marquette.edu/nursing/academicprograms-graduate.shtml/)
Graduate School Graduate Nursing Program Overview website (https://www.marquette.edu/grad/nursing-msn-dnp-certificate-graduate-programs.php)

Degrees Offered

Master of Science in Nursing, students are admitted under Plan B (non-thesis option, no comprehensive examination required) but Plan A (thesis option) is also offered; Post-master’s Certificate; Post-baccalaureate Certificate; Doctor of Nursing Practice, Doctor of Philosophy

Program Descriptions

Master of Science in Nursing

The master of science in nursing programs include:

1. The Direct Entry Master of Science for Non-nurses program. This program offers a generalist master of science in nursing to students with a non-nursing baccalaureate degree. Graduates of this program are academically prepared to take the national licensing examination as a registered nurse (NCLEX).

2. The Direct Entry Master of Science for A.D.N. Nurses program. This program is designed for A.D.N. nurses who have baccalaureate degrees in a non-nursing discipline. Graduates are prepared for specialty roles in advanced nursing practice or nursing leadership and makes them academically eligible to seek professional certification in one of these specialty nursing roles.

3. The Master of Science in Nursing program. This program is designed for nurses with baccalaureate degrees in nursing and prepares students for specialty roles in advanced nursing practice and nursing leadership. Graduates of the specialty program are academically eligible to seek professional certification in one of these roles.

MASTER OF SCIENCE IN NURSING — SECOND DEGREE DIRECT ENTRY FOR NON-NURSES with Non-nursing Baccalaureate Degrees

The master’s program for non-nursing graduates is designed for those individuals who hold baccalaureate degrees in fields other than nursing and who wish to become nurses. The program builds upon students’ broad educational preparation and provides an intense, accelerated nursing curriculum to meet students’ career goals.

There are two sites for the program: the Milwaukee campus and the Pleasant Prairie site. The former offers primarily in-person or hybrid courses. The latter is a hybrid program with online theory classes and in-person clinical and laboratory experiences. Full-time status is required for the program. Maintenance of 3.000 GPA each term and every summer session are required.

Admission and Application Requirements for M.S.N. – Second Degree Direct Entry for Non-Nurses

1. Baccalaureate degree in a discipline other than nursing with a degree conferral GPA of 3.000 or above, using a 4.000 system.

2. GRE scores (General Test only). Waived if applicant already has a master’s degree or if undergraduate GPA is 3.200 or above.

3. Completion of three recommendation forms.

4. Completion of the following prerequisite courses with grade of C or above. Grades of B or above make the applicant more competitive:
   - Human anatomy and physiology: 5-6 credits (preferably within the last 5 years).
   - Microbiology with a lab: 3 credits (preferably within the last 5 years).
   - Chemistry or biochemistry or biology: 3 credits (preferably within the last 5 years).
   - Therapeutic nutrition: 3 credits.
   - Behavioral sciences, e.g., psychology, sociology: 3 credits.
   - Statistics (including inferential): 3 credits to be completed within the last 5 years of program start date. For students who have had an inferential statistics course, but it has been longer than five years, the ability to demonstrate proficiency by examination may be available through an approved testing source. A list of approved examination providers is available from the College of Nursing.

5. Resume and written statement of professional goals.
6. Official transcripts from all current and previous colleges/universities including Marquette.

7. (For international applicants only) a TOEFL score of 80 on the internet-based version (a minimum of 20 on each section) or IELTS score of 6.5 or higher for each section.

8. A completed application form and fee.

Students admitted to the Milwaukee and Pleasant Prairie locations are required to pay a non-refundable $500 deposit, which is applied toward tuition.

MASTER OF SCIENCE IN NURSING — SECOND DEGREE DIRECT ENTRY FOR NURSEs with an Associate Degree in Nursing and Non-nursing Baccalaureate Degrees

This program facilitates students who have an associate's degree in nursing and also have a bachelor's degree in a discipline other than nursing to complete a master of science in nursing degree with a specialty focus as an advanced practice nurse or nurse leader.

Admission and Application Requirements for M.S.N. — Second Degree Direct Entry for A.D.N. Nurses

1. Baccalaureate degree in a discipline other than nursing with a GPA of 3.000 or above, using a 4.000 system.

2. Associate's degree in nursing with a GPA of 3.00 or above, using a 4.000 system.

3. GRE scores (General Test only). Waived if applicant already has a master's degree or if undergraduate GPA is 3.200 or above.

4. Completion of three recommendation forms.

5. Resume and written statement of professional goals.

6. Completion of the following prerequisite courses with grade of C or above:
   - Anatomy and physiology: 5-6 credits.
   - Chemistry or biochemistry or biology or microbiology: 5-6 credits total.
   - Behavioral sciences, e.g., psychology, sociology: 3 credits.
   - Statistics (including inferential): 3 credits to be completed within 5 years of program start date. For students who have had an inferential statistics course, but it has been longer than five years, the ability to demonstrate proficiency by examination may be available through an approved testing source. A list of approved examination providers is available from the College of Nursing.

7. Official transcripts from all current and previous colleges/universities including Marquette.

8. Wisconsin or eNLC R.N. Licensure.

9. BCLS from the American Heart Association, which must be maintained during all programs. Additional certifications: pediatric acute care - PALS prior to clinical; pediatric primary care – optional PALS prior to clinical; adult-older adult acute care - ACLS prior to clinical; nurse anesthesia - ACLS and PALS certification upon admission.

10. For the acute care nurse practitioner program (pediatric or adult-gerontology) applicants: A minimum of one year of full-time work experience (or its part-time equivalent) as a registered nurse in an acute care setting with the appropriate age population is required prior to beginning any clinical courses. For primary care nurse practitioner program applicants, a minimum of one year of professional nursing experience is required prior to beginning clinical courses.

11. (For international applicants only) a TOEFL score of 80 on the internet-based version (a minimum of 20 on each section) or IELTS score of 6.5 or higher for each section.

12. A completed application form and fee.

MASTER OF SCIENCE IN NURSING for Nurses with Baccalaureate Degrees in Nursing

The master of science in nursing program for nurses with baccalaureate degrees in nursing prepares nurses for specialty roles in advanced practice nursing or nursing leadership. Graduates of the specialty program are academically eligible to seek formal professional certification.

Master of Science in Nursing Specializations

Adult-Gerontology Primary Care Nurse Practitioner

Prepares students to apply advanced clinical assessment and management skills to episodic and chronic health problems. Care includes health promotion, advanced physical assessment, diagnosis and management of health problems in patients aged 13 and up, in a clinic setting. Graduates
are academically eligible to take the national certification examination for adult gerontology primary care nurse practitioner. One year of full-time or equivalent professional nursing experience with an adult or gerontology population is required prior to beginning clinical courses.

**Adult-Gerontology Acute Care Nurse Practitioner**
Prepares students to apply advanced clinical assessment and management skills to complex health problems. Graduates care for acutely ill patients, ages 13 and up, in a variety of settings such as acute care facilities, specialty practice offices and skilled care. Graduates are academically eligible to take the national certification examination for adult gerontology acute care nurse practitioner. One year of full-time nursing experience in an acute care setting is required prior to beginning clinical courses. This specialization is offered both at the Milwaukee and the Indianapolis sites. Admissions for the AGACNP program in Indianapolis follow a biennial cohort model, with new cohorts beginning in the fall of odd years. Applications for each cohort open in May of even years. Program offering is contingent on sufficient cohort admission.

**Adult-Gerontology Clinical Nurse Specialist**
Prepares students for practice in three spheres of influence: patient/family, nurse/nursing and organizational/institutional. Includes knowledge of health promotion, advanced physical assessment, evidence-based practice, systems, quality and safety. Graduates are academically eligible to take the national certification examination for adult gerontology clinical nurse specialist. This program offering is contingent on a sufficient cohort admission.

**Nurse Midwifery**
Prepares students for independent management of women during the antepartum, intrapartum and postpartum periods and for primary and gynecologic care of women throughout the life span. Graduates are prepared for collaborative management of women with risk factors. Program graduates are academically eligible to take the national certification examination of the American Midwifery Certification Board.

**Pediatric Primary Care Nurse Practitioner**
Prepares students for advanced practice as a pediatric nurse practitioner. Graduates are prepared to independently provide health care for children and families from simple to complex health issues, usually in primary care settings. Graduates are academically eligible to take primary care pediatric nurse practitioner national certification examinations. One year of full-time or equivalent professional nursing experience with any population is required prior to beginning clinical courses.

**Pediatric Acute Care Nurse Practitioner**
Prepares students to independently manage care for complex chronically ill, acutely ill and critically ill children. Graduates are eligible to take the national certification examination for the acute care pediatric nurse practitioner specialty. One year of full-time nursing experience in a pediatric acute care setting is required prior to beginning clinical courses.

**Dual Primary Care and Acute Care Pediatric Nurse Practitioner**
Prepares students to practice as a dual-trained pediatric acute care/primary care nurse practitioner. Graduates are prepared to manage well children, pediatric acute and episodic illnesses, complex chronically ill, acutely ill and critically ill children. Graduates are eligible to take the national certification examinations for the acute care and primary care pediatric nurse practitioner specialties. One year of full-time nursing experience in a pediatric acute care setting is required prior to beginning acute care clinical courses.

**Health Systems Leadership**
Preparation for leadership, administrative and executive roles through attainment of knowledge and skills needed to work in complex health systems, including course work in leading change, managing human capital, clinical operations, ethics and strategic thinking. Graduates are academically eligible to take national certification examinations in nursing administration or health care administration. Courses are offered primarily online in a cohort model, with an in-person immersion experience each term.

**Certificate Programs**

**Post-master's Certificate Programs**
Nurses with graduate degrees in nursing may attain a post-master's certificate in the following specializations. These certificates allow the graduate to attain certification in a specialty area.

- Adult-Gerontology Acute Care Nurse Practitioner (also offered at the Indianapolis campus)
- Adult-Gerontology Primary Care Nurse Practitioner
- Adult-Gerontology Clinical Nurse Specialist
- Nurse Midwifery
- Pediatric Acute Care Nurse Practitioner
- Pediatric Primary Care Nurse Practitioner
- Dual Primary and Acute Care Pediatric Nurse Practitioner
- Health Systems Leadership

**POST-BACCALAUREATE CERTIFICATE Program**
*(Moratorium on Admissions for New Students)*
The post-baccalaureate certificate program prepares registered nurses and other health care or social service professionals for clinical case management and care coordination (CCM/CC) in a variety of health care system, community-based or managed care settings. Completion of the 12-credit graduate-level courses also provides a foundation for obtaining a graduate degree such as master of science in nursing (M.S.N.) or doctor of nursing practice (D.N.P.). Applicants to the post-baccalaureate certificate in clinical case management and care coordination (CCM/CC) must apply online through the Marquette University Graduate School (https://graduate.admissions.marquette.edu/apply/).

Doctor of Nursing Practice

The doctor of nursing practice emphasizes development of nursing practice expertise at the highest level. The curriculum also includes translational research, epidemiology, informatics, statistics, advanced clinical practice, health policy and professional issues. The doctor of nursing practice includes two entry points: the post-master to doctor of nursing practice and the post-baccalaureate to doctor of nursing practice.

The post-master to doctor of nursing practice entry requires the student to have a graduate degree in nursing with a specialization in an advanced practice or leadership/policy role. If students do not have this preparation in their graduate degree in nursing, a post-master’s certificate in one of these areas must be completed concurrently with the post-master’s doctor of nursing practice degree.

The post-baccalaureate to doctor of nursing practice entry prepares expert advanced practice nurses or nursing leaders who understand the complexities of health care, including patient safety, advanced diagnostics and treatments, information technology, and epidemiology. Graduates of this program bring best practices to the point of service, having competence in evidence-based care and translational research methods for quality improvement. Graduates are eligible for specialty certification.

Doctor of Nursing Practice B.S.N.-D.N.P. (Post-baccalaureate) Specializations

Adult-Gerontology Primary Care Nurse Practitioner

Prepares students to have competence in leadership, evidence-based care and translational research methods for quality improvement as well as preparation at the very highest level to apply advanced clinical assessment and management skills to apply advanced clinical assessment and management skills to episodic and chronic health problems. Care includes health promotion, advanced physical assessment, diagnosis and management of health problems in patients aged 13 and up, in a clinic setting. Graduates are academically eligible to take the national certification examination for adult gerontology primary care nurse practitioner. One year of full-time or equivalent professional nursing experience with an adult or gerontology population is required prior to beginning clinical courses.

Adult-Gerontology Acute Care Nurse Practitioner

Prepares students to have competence in leadership, evidence-based care and translational research methods for quality improvement as well as preparation at the very highest level to apply advanced clinical assessment and management skills to complex health problems. Graduates of this program care for acutely ill patients, ages 13 and up, in a variety of settings such as acute care facilities, specialty practice offices and skilled care. Graduates are academically eligible to take the national certification examination for adult gerontology acute care nurse practitioner. One year of full-time nursing experience in an acute care setting with the adult population is required prior to beginning clinical courses.

Nurse Anesthesia

Prepares students to have competence in leadership, evidence-based care and translational research methods for quality improvement as well as preparation at the very highest level to apply advanced clinical assessment and management skills to complex health problems. The nurse anesthesia program prepares expert clinicians who understand the complexities of health care, including patient safety, advanced diagnostics and treatments, information technology, business management and health care finance. The curriculum and clinical experiences prepare students in a variety of regional and general anesthesia techniques for every setting in which anesthesia is delivered to patients. A minimum of one year, preferably two years, of full-time work experience (or its part-time equivalent) as a registered nurse in a critical care setting within the United States, its territories or a U.S. military hospital outside of the United States is required prior to application. Fall admission only.

Pediatric Primary Care Nurse Practitioner

Prepares students to have competence in leadership, evidence-based care and translational research methods for quality improvement as well as preparation at the very highest level to apply advanced clinical assessment and management skills. The program prepares nurses for advanced practice as pediatric nurse practitioners. Graduates are prepared to independently provide health care for children and families from simple to complex health issues usually in primary care settings. Graduates are academically eligible to take primary care pediatric nurse practitioner national certification examinations. One year of full-time or equivalent professional nursing experience with any population is required prior to beginning clinical courses.

Pediatric Acute Care Nurse Practitioner

Prepares students to have competence in leadership, evidence-based care and translational research methods for quality improvement as well as preparation at the very highest level to apply advanced clinical assessment and management skills. Graduates are prepared to manage complex chronically ill, acutely ill and critically ill children. Graduates are eligible to take the national certification examination for the acute care pediatric nurse practitioner specialty. One year of full-time nursing experience in pediatric acute care setting is required prior to beginning clinical courses.

Dual Primary Care and Acute Care Pediatric Nurse Practitioner

Prepares students to have competence in leadership, evidence-based care and translational research methods for quality improvement as well as preparation at the very highest level to apply advanced clinical assessment and management skills. The program prepares nurses to practice as a dual-trained pediatric acute care/primary care nurse practitioner. Graduates are prepared to manage well children, pediatric acute and episodic illnesses, complex chronically ill, acutely ill and critically ill children. Graduates are eligible to take the national certification examinations for the acute care and
primary care pediatric nurse practitioner specialties. One year of full-time nursing experience in pediatric acute care setting is required prior to beginning acute care clinical courses.

**Health Systems Leadership**

Develops advanced skills in management of evidence based care and translational research methods as well as operational and strategic leadership. Hybrid model prepares health care leaders for administrative and executive roles through attainment of knowledge and skills needed to work in complex health systems, including course work in leading change, managing human capital, clinical operations, ethics and strategic thinking. Academically eligible to take certification exams in nursing administration or health care administration. Many required specialty courses are offered online in a cohort model. Courses specific to the attainment of the D.N.P. may be offered in a hybrid format. Intensive in-person experiences each term.

**Admission and Application Requirements for the M.S.N. for Nurses with Baccalaureate Degrees in Nursing, the Doctor of Nursing Practice or Post-master’s Certificate**

1. Applicants to the post-baccalaureate to master of science in nursing (M.S.N.) program or the post-baccalaureate to doctor of nursing practice (D.N.P.) program should have graduated with, or be about to graduate with, a bachelor’s degree in nursing from a nationally accredited program with an upper division major in nursing. (Specifically, for the nurse anesthesia D.N.P. specialty, a baccalaureate or graduate degree in nursing from a nationally accredited college or university is required.) The applicants for the post-master to doctor of nursing practice must have an earned nursing master’s degree with a specialization in an advanced practice or leadership/policy role with evidence of certification in a specialty, if applicable. Applicants for a post master’s certificate must have a graduate degree in nursing.

2. The required minimum undergraduate GPA of 3.000 on a 4.000 scale is required for the M.S.N. and the post-baccalaureate D.N.P. Additionally, for the D.N.P. with the nurse anesthesia specialty, a science GPA of 3.000 or above is required. For programs requiring a prior master of science nursing degree, the GPA from that degree must be a minimum of 3.000 on a 4.000 scale. For graduates of foreign nursing schools, a formal evaluation of their nursing program of study documenting equivalency to a U.S. bachelor of science in nursing degree must be submitted.

3. Prior to or during the first term of study, all master of science in nursing and post-baccalaureate doctor of nursing practice applicants must have taken undergraduate nursing research and a statistics course which included inferential analysis (must be completed within 5 years of program start date). If the time period of 5 years has been exceeded for the statistics course, it may be possible for applicants to demonstrate proficiency by examination through an approved testing source (list of approved examinations available from the College of Nursing). Applicants who select an advanced practice nursing specialization must have taken an undergraduate course in health assessment.

4. Graduate Record Exam Scores (GRE). Waived if cumulative GPA is 3.200 or higher.

5. Unencumbered Registered Nurse license to practice in the United States. A Wisconsin or eNLC license is required at the time of admission. For students in the Indiana program, an Indiana R.N. license is required.

6. Clinical experience requirements

   a. For acute care nurse practitioner program (pediatric or adult-gerontology) applicants: A minimum of one year of full-time work experience with the appropriate age population (or its part-time equivalent) as a registered nurse in an acute care setting is required prior to beginning any clinical courses. For primary care nurse practitioner program applicants: A minimum of one year of professional nursing experience is required prior to beginning clinical courses.

   b. For nurse anesthesia: A minimum of one year, preferably two years, of full-time work experience (or its part-time equivalent) as a registered nurse in a critical care setting within the United States, its territories or a U.S. military hospital outside of the United States. Applicants must have developed as an independent decision maker capable of using and interpreting advanced monitoring techniques based on knowledge of physiological and pharmacological principles. A critical care setting is defined as one where, on a routine basis, the registered nurse manages one or more of the following: invasive hemodynamic monitors (e.g., pulmonary artery, central venous pressure, and arterial catheters), cardiac assist devices, mechanical ventilation and vasoactive infusions. Examples of critical care settings may include, but are not limited to: surgical intensive care, cardiothoracic intensive care, coronary intensive care, medical intensive care, pediatric intensive care and neonatal intensive care. Experiences in other areas may be considered provided the applicant can demonstrate competence with the above identified skills (i.e., invasive monitoring, etc.).

7. BCLS from the American Heart Association, which must be maintained during all programs. Additional certifications: pediatric acute care - PALS prior to clinical; pediatric primary care – optional PALS prior to clinical; adult-older adult acute care - ACLS prior to clinical; nurse anesthesia - ACLS and PALS certification upon admission.

8. Letters of reference: Applicants to the post-baccalaureate to master of science in nursing (M.S.N.) program or the post-baccalaureate to doctor of nursing practice (D.N.P.) program, three completed recommendation forms prepared by previous or present employers and teachers familiar with graduate education in nursing. For nurse anesthesia applicants, at least one letter must come from the critical care area. For post-master’s certificate applicants, one letter of reference is required. If the applicant is a graduate from the Marquette Direct Entry generalist M.S.N. program, a reference from a previous clinical faculty is required.
9. A written statement of professional goals, including reasons for pursuing graduate study in the specialty area. Nurse anesthesia applicants must address career goals and future contributions to the nurse anesthesia profession in a two-page, double-spaced document.

10. Curriculum vitae or resume.

11. Official transcripts from all current and previous colleges or universities - must reflect undergraduate courses in health assessment, nursing research and statistics (including inferential analysis).

12. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

13. A completed application form and fee.

14. An interview is required for applicants to nurse anesthesia and nurse midwifery programs. The adult-gerontology acute care nurse practitioner may require an interview. Applicants who are invited for an interview are notified by email.

**Doctor of Philosophy**

The doctor of philosophy (Ph.D.) program prepares nurse-scientists as teacher/scholars with an emphasis on nursing knowledge development in a substantive research area of science aimed to improve health and health care. The College of Nursing faculty have expertise within the following substantive research foci:

- Community engaged research
- Person-centered research
- Nursing education research

There are two entry routes to the Ph.D. program: post-graduate and post-baccalaureate. Applicants to the doctor of philosophy (Ph.D.) program in nursing should have graduated with, or be about to graduate with, a bachelor of science in nursing, a master’s or a professional doctoral (D.N.P.) degree in nursing from a nationally accredited program.

For a post-bachelor’s applicant, the requirements are: R.N. licensure, a GPA of 3.200 on a 4.000 scale, a statistics course within the last 5 years, acceptable GRE scores, three letters of reference (preferably from Ph.D.-prepared nurses), a goal statement and a personal interview.

Generally, for a post-graduate applicant, a cumulative graduate GPA of 3.200 on a 4.000 scale is recommended. A graduate-level research course is a required prerequisite along with the GRE and a statistics course with a grade of a B or above within the last 5 years, three letters of reference (preferably from PhD prepared nurses), a goal statement and a personal interview.

Graduates of foreign nursing schools must submit a formal evaluation of their nursing program of study which documents equivalency to a U.S. bachelor of science in nursing degree or graduate degree in nursing. They must be licensed to practice as a registered nurse in the United States.

Familiarity with computers and the web (e.g., electronic retrieval of data, word processing) is required for all applicants. Some courses use online, web-enhanced and/or hybrid teaching.

**Application Requirements for the Doctor of Philosophy**

Applicants must submit:

1. A completed application form and fee.

2. Official transcripts from all current and previous colleges/universities including Marquette.

3. Three Ph.D. letters of recommendation.

4. GRE scores (General Test only).

5. A curriculum vitae.

6. A written statement of professional goals, including reasons for pursuing graduate study. Applicants must include objectives/career intentions, including research interests.

7. Sample of scholarly writing.

8. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

**Application Deadlines and Start Terms**

Nov. 15
For spring admission: Direct Entry for A.D.N. nurses; M.S.N.; post-master's certificates; Ph.D.; and D.N.P. programs other than Nurse Anesthesia.

Dec. 1
For spring admission: Direct Entry M.S.N. for non-nurses (Pleasant Prairie).

Dec. 15
For summer admission for all programs. Required for Direct Entry M.S.N. for non-nurses (Milwaukee). Summer admission is recommended for the Ph.D. program.

Jan. 15
For fall admission: Nurse Anesthesia D.N.P.

Feb. 15
For fall admission: M.S.N.; Direct Entry for A.D.N. nurses; Direct Entry M.S.N. for non-nurses (Pleasant Prairie); post-master’s certificates; Ph.D.; and D.N.P. programs other than Nurse Anesthesia.

Note: M.S.N., post-master’s certificate, Direct Entry for A.D.N. nurses, Direct Entry M.S.N. for non-nurses (Pleasant Prairie), Ph.D. and D.N.P. applicants who apply after the Feb. 15 deadline are considered on a space-available basis for fall admission, provided their application is complete by June 1.

GENERAL INFORMATION

Upon acceptance to the graduate program, students must complete and submit the Graduate Student Health Status Report form. Information on CPR requirements, physical examination and immunization status, including results of a T.B. skin test and proof of Wisconsin R.N. licensure (or Indiana R.N. licensure for students in the adult-gerontology adult acute care nurse practitioner - Indianapolis M.S.N.) and a criminal background check and drug screen must be submitted to a web-based clinical data tracking program (castlebranch.com ([https://www.castlebranch.com/])). Results of a T.B. skin test must be provided annually, an influenza vaccine is required annually, and a drug screen must be completed three months prior to beginning clinical practicum courses. Students are responsible for the cost of these services. The information is required for progression within the program.

Clinical courses in the College of Nursing are restricted to students in the degree program. Various clinical facilities in the greater Milwaukee area, throughout Wisconsin and in northern Illinois are utilized for clinical experiences. Indiana based programs have clinical experiences in Indiana. While Marquette University is concerned about the professional advancement of its students, facilitates the process of certification, and provides excellent educational opportunities, it cautions that professional success in a chosen field requires, above all else, constant development of individual abilities, personal initiative and a professional sense of commitment to fulfill all appropriate legal and technical responsibilities. Hence, the university assumes no responsibility for the success of the students in obtaining educational certification or other types of professional licensure.

Licensure in Wisconsin or eNLC state is mandatory for employment with compensation.

PROGRESSION POLICY

The College of Nursing Academic Progression Policy for Graduate Students applies to all course work taken during the academic year and summer sessions. The policies of the Graduate School on academic performance, professional integrity, professional performance, academic dishonesty and student conduct are all followed by the College of Nursing. A variety of responses to problems in any of these areas may be implemented, depending on the nature of the problems encountered. Warnings, remediation plans, probation, immediate withdrawal from clinical or laboratory activities, suspension and dismissal are all possible actions under these policies. Students are bound by all Graduate School policies including those related to repeating a course. See the Graduate School bulletin for information on academic performance (p. 31).

Additionally:

1. Grades of F, ADW, WA, and WF are not acceptable in any course and are grounds for dismissal from the program. If the student is allowed to remain in the program, the course in which these grades were earned must be repeated with minimum grade of B-. The timing of when the course may be repeated is on a space-available basis and successful repeat of a course does not guarantee that the student will retain a space in their program.
2. A cumulative grade point average of at least 3.00 must be maintained each term.
3. For graduate students in advanced practice options, a minimum grade of B- in NURS 6030 Pathophysiological Concepts for Advanced Nursing Practice, NURS 6032 Pharmacology for Advanced Nursing Practice, NURS 6035 Advanced Health Assessment Across the Lifespan, and all specialty theory courses is required. Ph.D. students are required to earn at least a B- in all courses. A student who earns less than a B- in any of the above-mentioned courses is required to repeat the course. The timing of when the course may be repeated is on a space-available basis and may significantly delay program progression. The student is not guaranteed that they will retain a space in the advanced specialty program.
4. Graduate students in advanced practice options who earn a grade less than a B- in a clinical course will be dismissed from the program. If a student successfully appeals the dismissal decision and is allowed to continue in the program, the student must repeat the clinical course and earn at least a B- grade. The timing of when the course may be repeated is on a space-available basis. The student is not guaranteed that they will retain a space in their program. Students in the Direct Entry M.S.N. program must achieve at least a B- in a clinical course or the course must be repeated. The
timing of when the course may be repeated is on a space-available basis and successful repeat of a course does not guarantee that the student will retain a space in their program.

5. A student may be removed from a clinical course and dismissed from a program at any time due to unsafe clinical performance, lack of preparedness to care for patients, unprofessional behaviors or other patient-safety related issues. See the Graduate School bulletin for information on academic performance (p. 31).

6. A lack of substantial and visible progress toward completion of program requirements, including failure to complete the qualifying examination, thesis, dissertation or capstone project may be grounds for dismissal.

7. No more than two different courses may be repeated due to unsatisfactory grades. The student must abide by university policy governing the repeat of any courses. See the Graduate School bulletin for information on repeated courses (p. 46).

SPECIAL FEES

1. $60 – Cardiopulmonary Resuscitation (CPR) Certification (approximate fee). (This certification must be maintained throughout the student’s program through biannual recertification.)

2. $124 – Health requirements and criminal background check initial fee (approximate fee) and drug test. Additional costs may be required for immunizations, antibody titers and physical examinations. (castlebranch.com (https://www.castlebranch.com/)).

3. $90 – A one-time clinical tracking system (Typhon (http://www.typhongroup.com/products.html)) fee for M.S.N. and D.N.P. students in the specialty clinicals.

Additional fees for Direct Entry M.S.N. students:

1. $500 – Assessment Tests, predictor examination, and NCLEX review course for the M.S.N. program for Non-Nursing Graduates. (Approximate fee. Exact amount based upon vendor costs in effect at time of registration.)

2. $300 – Uniforms for the M.S.N. program for Non-Nursing Graduates. (Approximate fee. Must be purchased through a private vendor. Vendor list available from the College of Nursing.)

3. $175 – Assessment Equipment for the M.S.N. program for Non-Nursing Graduates. (Stethoscope $70. Sphygmomanometer $60. Approximate fee. Exact amount based upon vendor costs in effect at time of registration. Must be purchased through a private vendor.)

4. For Milwaukee based Direct Entry students, a laptop computer that meets the minimum recommendations (https://www.marquette.edu/its/help/getting/studentpc.shtml/) specified by the university is required. All Direct Entry students are required to have a computer with webcam, microphone and internet access.

Program fees for Nurse Anesthesia students

Acceptance Fee

- The College of Nursing requires that all students accepting an offer of admission to the graduate nurse anesthesia educational program submit a non-refundable deposit of $1,000 to the Graduate School to be guaranteed a spot in the program. The deposit is then applied toward tuition and fees after the students register for the initial fall term.

Annual Fees

- Annual, nonrefundable, technology and evaluation fee of $2,659 to be paid in full at the start of each fall term.

- Annual malpractice insurance fee of $275 to be paid in full at the start of each fall term. Nurse anesthesia students are required to hold malpractice insurance coverage as identified by the program with a policy start date of 9/1 for each year enrolled in the program. This coverage must be maintained throughout the program. A lapse in malpractice coverage results in removal of students from clinical site rotations.

Additional Expenses

- Associate membership with the American Association of Nurse Anesthetists (AANA) (approximately $200) Purchased in fall of the first year in the program, and membership is valid for the duration of nurse anesthesia educational program enrollment.

- BLS/ACLS/PALS certification: variable cost - Active BLS/ACLS/PALS certifications must be maintained throughout program enrollment.

- Text books and other personal instructional aids.

- Any costs incurred while on rotation to various clinical sites, attending professional meetings or external review courses.

- Scrub attire and lab coat (approximately $100). Students are required to purchase one set of scrub attire and one lab coat.
Clinical verification process: approximately $125 first year in program; $40 in years two and three of the program. Nurse anesthesia students must maintain compliance with all clinical-related requirements for the duration of program enrollment or risk being removed from clinical site rotations.

ACCREDITATION
The bachelor of science in nursing, master of science in nursing, doctor of nursing practice, and post-graduate APRN certificate programs at Marquette University College of Nursing are accredited by the Commission on Collegiate Nursing Education (CCNE), 655 K Street NW, Suite 750, Washington, DC 20001, (202) 887-6791, aacnursing.org/CCNE (http://www.aacnursing.org/CCNE/); the Accreditation Commission for Midwifery Education (ACME) of the American College of Nurse-Midwives (ACNM), 8403 Colesville Road, Suite 1550, Silver Spring, MD 20910-6374, (240) 485-1800, http://www.midwife.org/; Council on Accreditation of Nurse Anesthesia Educational Programs (COA), 222 S. Prospect Avenue, Park Ridge, IL 60068-4001, (847) 655-1160, home.coa.us.com (http://home.coa.us.com/Pages/default.aspx).

Nursing Master's Requirements

Specializations:

- Adult-Gerontology Acute Care Nurse Practitioner
- Adult-Gerontology Primary Care Nurse Practitioner
- Adult-Gerontology Clinical Nurse Specialist
- Nurse Midwifery
- Dual Primary Care and Acute Care Pediatric Nurse Practitioner
- Pediatric Primary Care Nurse Practitioner
- Pediatric Acute Care Nurse Practitioner
- Health Systems Leadership

The M.S.N. program is designed to prepare students in the advanced practice specialties such as nurse practitioners, clinical nurse specialists, nurse midwives, nurse administrators/leaders, or as nurse generalists. Graduates of the program are prepared to:

1. Use data and analytical processes to discover, critique and/or synthesize nursing knowledge for the continued improvement of nursing care across diverse settings.

2. Integrate pertinent theories, research and other evidence, as well as patient and population perspectives to guide master's-level nursing practice.

3. Effectively use varied modes of communication, informatics and technology to promote safe and high-quality patient care.

4. Initiate, maintain and promote intra- and interprofessional collaboration.

5. Demonstrate leadership in ethical and clinical decision-making using a system’s perspective.

6. Provides culturally appropriate evidence-based clinical prevention and population health to individuals, families and aggregates.

The following requirements are in effect for the current academic year. Requirements may change due to changes in national standards.

Nursing students are admitted to the Graduate School under Plan B (non-thesis option). Students may change to Plan A (thesis option) if an official Change of Plan Form is submitted to the Office for Graduate Nursing Programs and is approved by the Graduate School.

The number of credits required to complete a degree is based on the area of specialization. Students completing a thesis must enroll for six additional thesis credits.

MASTER OF SCIENCE IN NURSING CURRICULUM

All students in the master of science in nursing program must take the four core courses (12 credits) and all courses listed for their specific program option (36-51 total credit hours, depending on specialization option chosen). Clinical practicum experiences include a minimum of five hours per credit.

Adult-Gerontology Acute Care Nurse Practitioner

Required Core Courses:

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>NURS 6000</td>
<td>Theoretical Foundations of Nursing</td>
<td>3</td>
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<tr>
<td>NURS 6007</td>
<td>Ethics, Policy and Health Care Advocacy</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6009</td>
<td>Organizational and Systems Leadership</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6010</td>
<td>Research and Evidence as a Foundation for Nursing</td>
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Required Specialization Courses:

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<tr>
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<tr>
<td>NURS 6030</td>
<td>Pathophysiological Concepts for Advanced Nursing Practice</td>
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<td>NURS 6032</td>
<td>Pharmacology for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6035</td>
<td>Advanced Health Assessment Across the Lifespan</td>
<td>3</td>
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<tr>
<td>Course Code</td>
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<tr>
<td>NURS 6037</td>
<td>Management of Episodic Health Problems</td>
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<tr>
<td>NURS 6240</td>
<td>Complex Health Problems</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6335</td>
<td>Differential Diagnosis and Advanced Skills for the Acutely Ill Adult</td>
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<td>NURS 6340</td>
<td>Complex Acute Care Problems</td>
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<tr>
<td>NURS 6351</td>
<td>Advanced Nursing Care of the Acutely Ill Adult-Older Adult 1-Clinical</td>
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<td>Advanced Nursing Care of the Acutely Ill Adult-Older Adult 3-Clinical</td>
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<td>NURS 6240</td>
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<td>NURS 6257</td>
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<td>NURS 6242</td>
<td>Concepts and Interventions for Health Problems Across the Life-Span</td>
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<td>Advanced Nursing of Adults-Gerontology 2-Clinical</td>
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<td>NURS 6244</td>
<td>Health Promotion Across the Life-Span</td>
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<td>NURS 6258</td>
<td>Adult Gerontology Clinical Nurse Specialist 1 - Clinical</td>
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<td>Adult Gerontology Clinical Nurse Specialist 2 - Clinical</td>
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<tr>
<td>NURS 6240</td>
<td>Complex Health Problems</td>
<td>3</td>
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<tr>
<td>or NURS 6340</td>
<td>Complex Acute Care Problems</td>
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</tbody>
</table>

Total Credit Hours: 42

**Adult-Gerontology Primary Care Nurse Practitioner**

**Required Core Courses:**
- NURS 6000: Theoretical Foundations of Nursing (3 credits)
- NURS 6007: Ethics, Policy and Health Care Advocacy (3 credits)
- NURS 6009: Organizational and Systems Leadership (3 credits)
- NURS 6010: Research and Evidence as a Foundation for Nursing (3 credits)

**Required Specialization Courses:**
- NURS 6030: Pathophysiological Concepts for Advanced Nursing Practice (3 credits)
- NURS 6032: Pharmacology for Advanced Nursing Practice (3 credits)
- NURS 6035: Advanced Health Assessment Across the Lifespan (3 credits)
- NURS 6037: Management of Episodic Health Problems (3 credits)
- NURS 6240: Complex Health Problems (3 credits)
- NURS 6257: Advanced Nursing of Adults-Gerontology 3-Clinical (3 credits)
- NURS 6242: Concepts and Interventions for Health Problems Across the Life-Span (3 credits)
- NURS 6251: Advanced Nursing of Adults-Gerontology 1-Clinical (3 credits)
- NURS 6252: Advanced Nursing of Adults-Gerontology 2-Clinical (3 credits)
- NURS 6244: Health Promotion Across the Life-Span (3 credits)
- NURS 6258: Adult Gerontology Clinical Nurse Specialist 1 - Clinical (3 credits)
- NURS 6259: Adult Gerontology Clinical Nurse Specialist 2 - Clinical (3 credits)
- NURS 6240: Complex Health Problems (3 credits)
- or NURS 6340: Complex Acute Care Problems (3 credits)

Total Credit Hours: 42

**Adult-Gerontology Clinical Nurse Specialist**

**Required Core Courses:**
- NURS 6000: Theoretical Foundations of Nursing (3 credits)
- NURS 6007: Ethics, Policy and Health Care Advocacy (3 credits)
- NURS 6009: Organizational and Systems Leadership (3 credits)
- NURS 6010: Research and Evidence as a Foundation for Nursing (3 credits)

**Required Specialization Courses:**
- NURS 6030: Pathophysiological Concepts for Advanced Nursing Practice (3 credits)
- NURS 6032: Pharmacology for Advanced Nursing Practice (3 credits)
- NURS 6035: Advanced Health Assessment Across the Lifespan (3 credits)
- NURS 6242: Concepts and Interventions for Health Problems Across the Life-Span (3 credits)
- NURS 6244: Health Promotion Across the Life-Span (3 credits)
- NURS 6258: Adult Gerontology Clinical Nurse Specialist 1 - Clinical (3 credits)
- NURS 6259: Adult Gerontology Clinical Nurse Specialist 2 - Clinical (3 credits)
- NURS 6240: Complex Health Problems (3 credits)
- or NURS 6340: Complex Acute Care Problems (3 credits)

6 credits of HEAL or NURS electives (6 credits)

Total Credit Hours: 42

**Dual Primary Care and Acute Care Pediatric Nurse Practitioner**

**Required Core Courses:**
- NURS 6000: Theoretical Foundations of Nursing (3 credits)
- NURS 6007: Ethics, Policy and Health Care Advocacy (3 credits)
- NURS 6009: Organizational and Systems Leadership (3 credits)
- NURS 6010: Research and Evidence as a Foundation for Nursing (3 credits)

Total Credit Hours: 42
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS 6010</td>
<td>Research and Evidence as a Foundation for Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6030</td>
<td>Pathophysiological Concepts for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6032</td>
<td>Pharmacology for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6035</td>
<td>Advanced Health Assessment Across the Lifespan</td>
<td>3</td>
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<tr>
<td>NURS 6242</td>
<td>Concepts and Interventions for Health Problems Across the Life-Span</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6244</td>
<td>Health Promotion Across the Life-Span</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6536</td>
<td>Complex/Chronic Pediatric Health Conditions</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6540</td>
<td>Seminar in Child and Family Health</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6542</td>
<td>Nursing Therapeutics for Acute/Episodic Illnesses in Children and Adolescents</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6851</td>
<td>Advanced Nursing Care of Children and Families 1-Clinical</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6852</td>
<td>Advanced Nursing Care of Children and Families 2-Clinical</td>
<td>3</td>
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<td>Nursing Therapeutics for Acute/Critical Illnesses in Children and Adolescents</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6852</td>
<td>Acutely/Chronically Ill Children - Clinical</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6853</td>
<td>Critically Ill Children - Clinical</td>
<td>3</td>
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**Nurse-Midwifery**

Required Core Courses:

<table>
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<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NURS 6000</td>
<td>Theoretical Foundations of Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6007</td>
<td>Ethics, Policy and Health Care Advocacy</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6009</td>
<td>Organizational and Systems Leadership</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6010</td>
<td>Research and Evidence as a Foundation for Nursing</td>
<td>3</td>
</tr>
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Required Specialization Courses:

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<thead>
<tr>
<th>Course Code</th>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>NURS 6030</td>
<td>Pathophysiological Concepts for Advanced Nursing Practice</td>
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</tr>
<tr>
<td>NURS 6032</td>
<td>Pharmacology for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6035</td>
<td>Advanced Health Assessment Across the Lifespan</td>
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</tr>
<tr>
<td>NURS 6037</td>
<td>Management of Episodic Health Problems</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6840</td>
<td>Advanced Concepts in Women's Health Care Management Across the Life Span</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6842</td>
<td>Advanced Concepts in Antepartum Management</td>
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</tr>
<tr>
<td>NURS 6844</td>
<td>Advanced Concepts in Postpartum and Newborn Management</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6846</td>
<td>Professional Issues in APN/DNP Practice</td>
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<tr>
<td>NURS 6851</td>
<td>Advanced Concepts in Labor Support</td>
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<tr>
<td>NURS 6852</td>
<td>Nurse-Midwifery Care During Labor and Birth</td>
<td>5</td>
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<tr>
<td>NURS 6853</td>
<td>Advanced Practicum in Nurse-Midwifery</td>
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**Pediatric Primary Care Nurse Practitioner**

Required Core Courses:

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<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
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<td>NURS 6000</td>
<td>Theoretical Foundations of Nursing</td>
<td>3</td>
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<tr>
<td>NURS 6007</td>
<td>Ethics, Policy and Health Care Advocacy</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6009</td>
<td>Organizational and Systems Leadership</td>
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<tr>
<td>NURS 6010</td>
<td>Research and Evidence as a Foundation for Nursing</td>
<td>3</td>
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Required Specialization Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>NURS 6030</td>
<td>Pathophysiological Concepts for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6032</td>
<td>Pharmacology for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6035</td>
<td>Advanced Health Assessment Across the Lifespan</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6042</td>
<td>Health Promotion Across the Life-Span</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6536</td>
<td>Complex/Chronic Pediatric Health Conditions</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6540</td>
<td>Seminar in Child and Family Health</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6542</td>
<td>Nursing Therapeutics for Acute/Episodic Illnesses in Children and Adolescents</td>
<td>3</td>
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<tr>
<td>NURS 6551</td>
<td>Advanced Nursing Care of Children and Families 1-Clinical</td>
<td>3</td>
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</table>
Nursing Care of Children and Families 2-Clinical 3
NURS 6552 Advanced Nursing Care of Children and Families 2-Clinical 3
NURS 6553 Advanced Nursing Care of Children and Families 3-Clinical 3

Total Credit Hours
42

Pediatric Acute Care Nurse Practitioner

Required Core Courses:
NURS 6000 Theoretical Foundations of Nursing 3
NURS 6007 Ethics, Policy and Health Care Advocacy 3
NURS 6009 Organizational and Systems Leadership 3
NURS 6010 Research and Evidence as a Foundation for Nursing 3

Required Specialization Courses:
NURS 6030 Pathophysiological Concepts for Advanced Nursing Practice 3
NURS 6032 Pharmacology for Advanced Nursing Practice 3
NURS 6035 Advanced Health Assessment Across the Lifespan 3
NURS 6242 Concepts and Interventions for Health Problems Across the Life-Span 3
NURS 6536 Complex/Chronic Pediatric Health Conditions 3
NURS 6540 Seminar in Child and Family Health 3
NURS 6640 Nursing Therapeutics for Acute/Critical Illnesses in Children and Adolescents 3
NURS 6651 Acutely Ill Children - Clinical 1 3
NURS 6652 Acutely/Chronically Ill Children - Clinical 2 3
NURS 6653 Critically Ill Children - Clinical 3 3

Total Credit Hours
42

Health Systems Leadership

Required Core Courses:
NURS 6000 Theoretical Foundations of Nursing 3
NURS 6010 Research and Evidence as a Foundation for Nursing 3
HEAL 6007 Ethics Policy and Advocacy in Health Care Organizations 3
NURS 6009 Organizational and Systems Leadership 3

Required Specialization Courses:
NURS 6854 Professional Role Development - Clinical 3
CMST 6200 Organizational Communication 3
HEAL 6830 Quality Improvement Science in Health Care 3
HEAL 6835 Health Care Informatics, Technology and Professional Issues 3
HEAL 6836 Marketing and Economics in Health Care 3
HEAL 6837 Managing Human Capital in Health Care 3
HEAL 6838 Leading People, Innovation and Strategic Change in Health Care Organizations 3
HEAL 6839 Healthcare Fiscal Management 3

Total Credit Hours
36

Direct Entry - Master of Science in Nursing

Master of Science in Nursing — Second Degree Direct Entry for Non-Nurses

The master of science in nursing program for non-nursing graduates is designed for individuals who hold baccalaureate degrees in fields other than nursing.

The 75-credit program builds upon previous, broad educational preparation and provides an intense, accelerated and specialized nursing curriculum preparing students to become eligible for the NCLEX-R.N. examination and to earn a generalist master of science in nursing degree (M.S.N. with no specialization) upon completion of the program.

Nursing students are admitted to the Graduate School under Plan B (non-thesis option). Plan B students in the master's program for non-nursing graduates are not required to write a thesis.
The leadership competencies achieved during this program positions students to seek employment in many health care settings. Students have the competencies necessary to practice at the microsystem level, providing point-of-care delivery with a focus on safety, quality and improved outcomes.

Graduates are eligible to apply for a post-master's certificate in one of the many specialties that Marquette offers, or to the D.N.P. or Ph.D. programs at Marquette.

Students must complete:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>NURS 6000</td>
<td>Theoretical Foundations of Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6001</td>
<td>Health Assessment and Fundamentals 1</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6002</td>
<td>Health Assessment and Fundamentals 2</td>
<td>4</td>
</tr>
<tr>
<td>NURS 6003</td>
<td>Essentials for Nursing Practice</td>
<td>3</td>
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<tr>
<td>NURS 6005</td>
<td>Concepts and Interventions for the Promotion of Mental Health -- Theory</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6007</td>
<td>Ethics, Policy and Health Care Advocacy</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6009</td>
<td>Organizational and Systems Leadership</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6010</td>
<td>Research and Evidence as a Foundation for Nursing</td>
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</tr>
<tr>
<td>NURS 6015</td>
<td>Pharmacotherapeutics for Nursing Practice</td>
<td>3</td>
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<tr>
<td>NURS 6030</td>
<td>Pathophysiological Concepts for Advanced Nursing Practice</td>
<td>3</td>
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<tr>
<td>NURS 6032</td>
<td>Pharmacology for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6035</td>
<td>Advanced Health Assessment Across the Lifespan</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6100</td>
<td>Community and Population Health Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6201</td>
<td>Nursing Concepts and Interventions for the Care of Adults/Older Adults 1 - Theory</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6202</td>
<td>Nursing Concepts and Interventions for the Care of Adults/Older Adults 2 - Theory</td>
<td>3</td>
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<tr>
<td>NURS 6244</td>
<td>Health Promotion Across the Life-Span</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6500</td>
<td>Family-Centered Nursing of Children</td>
<td>3</td>
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<tr>
<td>NURS 6700</td>
<td>Maternity Nursing and Women’s Health - Theory</td>
<td>3</td>
</tr>
<tr>
<td>HEAL 6825</td>
<td>Quality &amp; Patient Safety in Health Care</td>
<td>3</td>
</tr>
<tr>
<td>HEAL 6835</td>
<td>Health Care Informatics, Technology and Professional Issues</td>
<td>3</td>
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<tr>
<td>NURS 6970</td>
<td>Nursing Care for Patients with Chronic Conditions - Clinical</td>
<td>4</td>
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<tr>
<td>NURS 6971</td>
<td>Nursing Care for Patients with Acute Conditions - Clinical</td>
<td>4</td>
</tr>
<tr>
<td>NURS 6973</td>
<td>Professional Nursing Practice - Clinical</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6976</td>
<td>Transition to Nursing Practice and Leadership - Clinical</td>
<td>3</td>
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</tbody>
</table>

Total Credit Hours: 75

**Master of Science in Nursing — Second Degree Direct Entry for A.D.N. Nurses**

This program facilitates students who have an associate’s degree in nursing and also have a bachelor’s degree in a discipline other than nursing to complete a master of science in nursing degree. Prior to completing any courses in the specialization option of choice, students must complete:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>NURS 6010</td>
<td>Research and Evidence as a Foundation for Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6100</td>
<td>Community and Population Health Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6931</td>
<td>Topics in Nursing (Topic: Community Nursing Clinical)</td>
<td>3</td>
</tr>
<tr>
<td>HEAL 6825</td>
<td>Quality &amp; Patient Safety in Health Care</td>
<td>3</td>
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</tbody>
</table>

Total Credit Hours: 12

After completing the four courses listed above, students progress into their chosen specialization. The total number of credits taken to complete the master of science in nursing ranges from 39-51, depending on the specialization chosen, in addition to the initial 12 credits listed above.

**Nursing Doctor of Philosophy Requirements**

The doctor of philosophy (Ph.D.) prepares nurse-scientists as researchers and teachers/scholars with an emphasis on nursing knowledge development in a substantive research area of science aimed to improve health and health care.

Program Learning Outcomes and Performance Indicators

Students will be able to:
1. Develop and disseminate knowledge for the discipline of nursing that will impact health, healthcare and/or healthcare education.
   a. Synthesize research findings to guide nursing knowledge development.
   b. Design and conduct research.
   c. Develop, test and refine theories as a basis for nursing science.
   d. Analyze patterns of health equity and disparity.
   e. Effectively communicate nursing knowledge verbally, in writing, and through emerging technologies.

2. Advance innovation in principles and methods of nursing education.
   a. Apply teaching/learning principles in nursing education at the individual, course, and program level.
   b. Synthesize research findings to advance innovation and provide leadership in nursing education.
   c. Evaluate own progress regarding effective teaching/learning practices at the individual, course, and program level.

The College of Nursing faculty have expertise within the following substantive research foci: Community-engaged research, Person-centered research and Nursing education research.

**Post-Master’s Ph.D. Curriculum**

The post-master of science in nursing Ph.D. program is a 51-credit program with course work in the following five categories:

**Nursing Science (12 credits)**

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PHIL 6430</td>
<td>Philosophy of Knowledge</td>
<td>3</td>
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<tr>
<td>NURS 8000</td>
<td>Nursing Knowledge Development</td>
<td>3</td>
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<tr>
<td>HEAL 8010</td>
<td>Health Equity and Disparity</td>
<td>3</td>
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<tr>
<td>NURS 8980</td>
<td>Nursing Research Seminar and Practicum</td>
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<tr>
<td><strong>Total Credit Hours</strong></td>
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**Research and Statistics (15 credits)**

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<tr>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HEAL 8002</td>
<td>Qualitative Research</td>
<td>3</td>
</tr>
<tr>
<td>HEAL 8003</td>
<td>Quantitative Research</td>
<td>3</td>
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<tr>
<td>HEAL 8015</td>
<td>Applied Statistics for Health Sciences</td>
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<tr>
<td>HEAL 8016</td>
<td>Advanced Applied Statistics</td>
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</tr>
<tr>
<td>HEAL 8018</td>
<td>Advanced Measurement in Health Care</td>
<td>3</td>
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<tr>
<td><strong>Total Credit Hours</strong></td>
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**Teaching/Research (6 credits)**

<table>
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<th>Course Title</th>
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<tbody>
<tr>
<td>NURS 8020</td>
<td>Nursing Education Research, Policy, and Leadership</td>
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<tr>
<td>NURS 8981</td>
<td>Residency in Nursing Education</td>
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<tr>
<td>or NURS 8982</td>
<td>Nursing Research and Practicum II</td>
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<td><strong>Total Credit Hours</strong></td>
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</table>

**Cognates (6 credits)**

Six credits supportive of dissertation.

**Dissertation (12 credits)**

A doctoral student will follow a program of study defined, in conjunction with an adviser, on an approved Doctoral Program Planning Form. The student must complete all requirements listed on the Doctoral Program Planning Form, pass a qualifying examination and successfully defend a dissertation to complete the program. The doctoral dissertation must represent an original research contribution and show high attainment and clear ability to do independent research.

**Post-Baccalaureate Ph.D. Curriculum**

The post-bachelor of science in nursing Ph.D. program requires an additional 18 credits to the 51 credits listed above. Required courses are:

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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>NURS 6000</td>
<td>Theoretical Foundations of Nursing</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6007</td>
<td>Ethics, Policy and Health Care Advocacy</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6009</td>
<td>Organizational and Systems Leadership</td>
<td>3</td>
</tr>
</tbody>
</table>
**Doctor of Nursing Practice Requirements**

**Specializations:**
- Adult-Gerontology Primary Care Nurse Practitioner
- Adult-Gerontology Acute Care Nurse Practitioner
- Dual Primary Care and Acute Care Pediatric Nurse Practitioner
- Health Systems Leadership
- Pediatric Primary Care Nurse Practitioner
- Pediatric Acute Care Nurse Practitioner
- Nurse Anesthesia
- Nurse Midwifery (Post-master's D.N.P. only)

The doctor of nursing practice (D.N.P.) program is designed to prepare advanced practice nurses and nurse administrators at the highest level. Graduates of the program are prepared to:

1. Demonstrate advanced, evidence-based management of care in a cultural context at the individual, family, population and/or organizational/systems level.
2. Demonstrate policy analysis and advocacy for social justice, equity and ethical policies in health care delivery.
3. Analyze and apply models, theories and scientific evidence to improve quality of health care of diverse populations.
4. Employ interprofessional and leadership knowledge and skills to transform health care and complex delivery systems.
5. Integrate knowledge of and skills in information systems and patient care technologies for the improvement and transformation of health care.

**Doctor of Nursing Practice Curriculum (Post-Baccalaureate)**

The doctor of nursing practice (D.N.P.) is a post-baccalaureate\(^1\) degree requiring between 63 and 91 credit hours, depending on the option chosen. Course requirements for each specialization are listed below. Students, with the exception of those in the nurse anesthesia specialization, earn a master of science in nursing en route to the doctor of nursing practice.

```
\(^{1}\) The advanced practice nursing: nurse-midwifery option is only post-master's and does not have a post-baccalaureate option.
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### Adult-Gerontology Primary Care Nurse Practitioner

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>NURS 6000</td>
<td>Theoretical Foundations of Nursing</td>
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</tr>
<tr>
<td>NURS 6007</td>
<td>Ethics, Policy and Health Care Advocacy</td>
<td>3</td>
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<tr>
<td>NURS 6009</td>
<td>Organizational and Systems Leadership</td>
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<td>NURS 6010</td>
<td>Research and Evidence as a Foundation for Nursing</td>
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<tr>
<td>NURS 6030</td>
<td>Pathophysiological Concepts for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6032</td>
<td>Pharmacology for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6035</td>
<td>Advanced Health Assessment Across the Lifespan</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6037</td>
<td>Management of Episodic Health Problems</td>
<td>3</td>
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<td>NURS 6240</td>
<td>Complex Health Problems</td>
<td>3</td>
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<tr>
<td>NURS 6242</td>
<td>Concepts and Interventions for Health Problems Across the Life-Span</td>
<td>3</td>
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<tr>
<td>NURS 6244</td>
<td>Health Promotion Across the Life-Span</td>
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</tr>
<tr>
<td>NURS 6251</td>
<td>Advanced Nursing of Adults-Gerontology 1-Clinical</td>
<td>3</td>
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<tr>
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<td>Advanced Nursing of Adults-Gerontology 2-Clinical</td>
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<tr>
<td>NURS 6257</td>
<td>Advanced Nursing of Adults-Gerontology 3-Clinical</td>
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<tr>
<td>NURS 6746</td>
<td>Professional Issues in APN/DNP Practice</td>
<td>3</td>
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<tr>
<td>HEAL 6825</td>
<td>Quality &amp; Patient Safety in Health Care</td>
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<tr>
<td>or HEAL 6830</td>
<td>Quality Improvement Science in Health Care</td>
<td>3</td>
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<tr>
<td>HEAL 6835</td>
<td>Health Care Informatics, Technology and Professional Issues</td>
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<tr>
<td>HEAL 7010</td>
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<td>Residency for DNP with Adults/Older Adults Primary Care</td>
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<td>NURS 7997</td>
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<td>HEAL 8015</td>
<td>Applied Statistics for Health Sciences</td>
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**Adult-Gerontology Acute Care Nurse Practitioner**

<table>
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<th>Course Code</th>
<th>Course Title</th>
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<td>NURS 6000</td>
<td>Theoretical Foundations of Nursing</td>
<td>3</td>
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<tr>
<td>NURS 6007</td>
<td>Ethics, Policy and Health Care Advocacy</td>
<td>3</td>
</tr>
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<td>NURS 6009</td>
<td>Organizational and Systems Leadership</td>
<td>3</td>
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<td>NURS 6010</td>
<td>Research and Evidence as a Foundation for Nursing</td>
<td>3</td>
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<td>NURS 6030</td>
<td>Pathophysiological Concepts for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6032</td>
<td>Pharmacology for Advanced Nursing Practice</td>
<td>3</td>
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<tr>
<td>NURS 6035</td>
<td>Advanced Health Assessment Across the Lifespan</td>
<td>3</td>
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<td>NURS 6037</td>
<td>Management of Episodic Health Problems</td>
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<td>NURS 6240</td>
<td>Complex Health Problems</td>
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<td>Differential Diagnosis and Advanced Skills for the Acutely Ill Adult</td>
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<td>Complex Acute Care Problems</td>
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<td>Advanced Nursing Care of the Acutely Ill Adult-Older Adult 2-Clinical</td>
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<td>Quality &amp; Patient Safety in Health Care</td>
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<td>or HEAL 6830</td>
<td>Quality Improvement Science in Health Care</td>
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<td>Health Care Informatics, Technology and Professional Issues</td>
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<td>HEAL 7010</td>
<td>Translational Research</td>
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<td>HEAL 7012</td>
<td>Epidemiology</td>
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<tr>
<td>NURS 7981</td>
<td>Residency for DNP with Acutely Ill Adults</td>
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<td>NURS 7996</td>
<td>Doctor of Nursing Practice Capstone 1</td>
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<td>Doctor of Nursing Practice Capstone 2</td>
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<td>HEAL 8015</td>
<td>Applied Statistics for Health Sciences</td>
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<td><strong>Total Credit Hours</strong></td>
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**Dual Primary Care and Acute Care Pediatric Nurse Practitioner**

<table>
<thead>
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<th>Course Code</th>
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<tr>
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<td>Theoretical Foundations of Nursing</td>
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<td>NURS 6007</td>
<td>Ethics, Policy and Health Care Advocacy</td>
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<td>NURS 6009</td>
<td>Organizational and Systems Leadership</td>
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<td>NURS 6010</td>
<td>Research and Evidence as a Foundation for Nursing</td>
<td>3</td>
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<tr>
<td>NURS 6030</td>
<td>Pathophysiological Concepts for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6032</td>
<td>Pharmacology for Advanced Nursing Practice</td>
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</tr>
<tr>
<td>NURS 6035</td>
<td>Advanced Health Assessment Across the Lifespan</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6242</td>
<td>Concepts and Interventions for Health Problems Across the Life-Span</td>
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<tr>
<td>NURS 6244</td>
<td>Health Promotion Across the Life-Span</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6536</td>
<td>Complex/Chronic Pediatric Health Conditions</td>
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<tr>
<td>NURS 6540</td>
<td>Seminar in Child and Family Health</td>
<td>3</td>
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<tr>
<td>NURS 6542</td>
<td>Nursing Therapeutics for Acute/Episodic Illnesses in Children and Adolescents</td>
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<tr>
<td>NURS 6551</td>
<td>Advanced Nursing Care of Children and Families 1-Clinical</td>
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<td>Advanced Nursing Care of Children and Families 2-Clinical</td>
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<td>NURS 6640</td>
<td>Nursing Therapeutics for Acute/Critical Illnesses in Children and Adolescents</td>
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<td>NURS 6652</td>
<td>Acutely/Chronically Ill Children - Clinical 2</td>
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<td>NURS 6653</td>
<td>Critically Ill Children - Clinical 3</td>
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<tr>
<td>NURS 6746</td>
<td>Professional Issues in APN/DNP Practice</td>
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</table>
HEAL 6825  Quality & Patient Safety in Health Care  3
or HEAL 6830  Quality Improvement Science in Health Care
HEAL 6835  Health Care Informatics, Technology and Professional Issues  3
HEAL 7010  Translational Research  3
HEAL 7012  Epidemiology  3
NURS 7984  Residency for DNP with III Children/Adolescents  3
NURS 7996  Doctor of Nursing Practice Capstone 1  3
NURS 7997  Doctor of Nursing Practice Capstone 2  3
HEAL 8015  Applied Statistics for Health Sciences  3

Total Credit Hours  78

HEALTH SYSTEMS LEADERSHIP

NURS 6000  Theoretical Foundations of Nursing  3
NURS 6010  Research and Evidence as a Foundation for Nursing  3
HEAL 6007  Ethics Policy and Advocacy in Health Care Organizations  3
HEAL 6009  Health Care Systems: Managing Populations and Access  3
HEAL 6830  Quality Improvement Science in Health Care  3
HEAL 6835  Health Care Informatics, Technology and Professional Issues  3
HEAL 6836  Marketing and Economics in Health Care  3
HEAL 6837  Managing Human Capital in Health Care  3
HEAL 6838  Leading People, Innovation and Strategic Change in Health Care Organizations  3
HEAL 6839  Healthcare Fiscal Management  3
HEAL 6848  Health Care Policy  3
or HEAL 7049  Outcomes Management
HEAL 7010  Translational Research  3
HEAL 7012  Epidemiology  3
CMST 6200  Organizational Communication  3
NURS 6746  Professional Issues in APN/DNP Practice  3
NURS 6854  Professional Role Development - Clinical  3
NURS 7955  Health Care Management and Leadership - Clinical  3
NURS 7986  Residency for DNP in Health Care Systems Leadership  3
NURS 7996  Doctor of Nursing Practice Capstone 1  3
NURS 7997  Doctor of Nursing Practice Capstone 2  3

Total Credit Hours  63

Pediatric Primary Care Nurse Practitioner

NURS 6000  Theoretical Foundations of Nursing  3
NURS 6007  Ethics, Policy and Health Care Advocacy  3
NURS 6009  Organizational and Systems Leadership  3
NURS 6010  Research and Evidence as a Foundation for Nursing  3
NURS 6030  Pathophysiological Concepts for Advanced Nursing Practice  3
NURS 6032  Pharmacology for Advanced Nursing Practice  3
NURS 6035  Advanced Health Assessment Across the Lifespan  3
NURS 6244  Health Promotion Across the Life-Span  3
NURS 6536  Complex/Chronic Pediatric Health Conditions  3
NURS 6540  Seminar in Child and Family Health  3
NURS 6542  Nursing Therapeutics for Acute/Episodic Illnesses in Children and Adolescents  3
NURS 6551  Advanced Nursing Care of Children and Families 1-Clinical  3
NURS 6552  Advanced Nursing Care of Children and Families 2-Clinical  3
NURS 6553  Advanced Nursing Care of Children and Families 3-Clinical  3
NURS 6746  Professional Issues in APN/DNP Practice  3
HEAL 6825 Quality & Patient Safety in Health Care 3
or HEAL 6830 Quality Improvement Science in Health Care
HEAL 6835 Health Care Informatics, Technology and Professional Issues 3
HEAL 7010 Translational Research 3
HEAL 7012 Epidemiology 3
NURS 7996 Doctor of Nursing Practice Capstone 1 3
NURS 7983 Residency for DNP with Children and Families in Primary Care 3
NURS 7997 Doctor of Nursing Practice Capstone 2 3
HEAL 8015 Applied Statistics for Health Sciences 3

Total Credit Hours 69

**Pediatric Acute Care Nurse Practitioner**

NURS 6000 Theoretical Foundations of Nursing 3
NURS 6007 Ethics, Policy and Health Care Advocacy 3
NURS 6009 Organizational and Systems Leadership 3
NURS 6010 Research and Evidence as a Foundation for Nursing 3
NURS 6030 Pathophysiological Concepts for Advanced Nursing Practice 3
NURS 6032 Pharmacology for Advanced Nursing Practice 3
NURS 6035 Advanced Health Assessment Across the Lifespan 3
NURS 6242 Concepts and Interventions for Health Problems Across the Life-Span 3
NURS 6536 Complex/Chronic Pediatric Health Conditions 3
NURS 6540 Seminar in Child and Family Health 3
NURS 6651 Acutely Ill Children - Clinical 1 3
NURS 6652 Acutely/Chronically Ill Children - Clinical 2 3
NURS 6653 Critically Ill Children - Clinical 3 3
NURS 6640 Nursing Therapeutics for Acute/Critical Illnesses in Children and Adolescents 3
NURS 6746 Professional Issues in APN/DNP Practice 3
HEAL 6825 Quality & Patient Safety in Health Care 3
or HEAL 6830 Quality Improvement Science in Health Care
HEAL 6835 Health Care Informatics, Technology and Professional Issues 3
HEAL 7010 Translational Research 3
HEAL 7012 Epidemiology 3
NURS 7996 Doctor of Nursing Practice Capstone 1 3
NURS 7984 Residency for DNP with Ill Children/Adolescents 3
NURS 7997 Doctor of Nursing Practice Capstone 2 3
HEAL 8015 Applied Statistics for Health Sciences 3

Total Credit Hours 69

**Nurse Anesthesia**

NURS 6000 Theoretical Foundations of Nursing 3
NURS 6007 Ethics, Policy and Health Care Advocacy 3
NURS 6009 Organizational and Systems Leadership 3
NURS 6010 Research and Evidence as a Foundation for Nursing 3
NURS 6032 Pharmacology for Advanced Nursing Practice 3
NURS 6030 Pathophysiological Concepts for Advanced Nursing Practice 3
NURS 6035 Advanced Health Assessment Across the Lifespan 3
HEAL 6825 Quality & Patient Safety in Health Care 3
HEAL 6835 Health Care Informatics, Technology and Professional Issues 3
HEAL 7010 Translational Research 3
HEAL 7012 Epidemiology 3
NURS 7810 Scientific Foundations of Nurse Anesthesia Practice 3
NURS 7811 Nurse Anesthesia Advanced Physiology 4
Doctor of Nursing Practice Curriculum (Post-master's)

The College of Nursing also offers a post-master's to doctor of nursing practice program for nurses already holding a master's degree in nursing with specialization in an advanced practice nursing role, nursing administration/leadership, or health care policy. Nurses who have a master's degree in nursing, but not in one of these three foci, are required to complete a post-master's certificate in one of these specialties while pursuing the D.N.P. The 30-credit post-master's to doctor of nursing practice builds on the Marquette’s existing master’s program.

Transcripts of students whose master’s degrees are from nursing master’s programs other than Marquette University are evaluated on a case-by-case basis to assure attainment of prerequisite knowledge and clinical experience; additional course work beyond the 30-credit requirement may be necessary to meet all of the Essentials of Doctoral Education for Advanced Nursing Practice. A graduate course in organizational and systems leadership, such as NURS 6009 Organizational and Systems Leadership, is a prerequisite for the program. If students have already taken required courses listed for the post-master's to doctor of nursing practice curriculum as part of a prior degree, these courses are not counted toward the D.N.P., and other graduate-level courses approved by the program director/adviser are substituted to fulfill the 30-credit degree requirement.

Contact the College of Nursing at (414) 288-3810 for more information.

A post-master's certificate program prepares the nurse who already has a graduate degree in nursing to become academically eligible for certification as an advanced practice nurse or nurse leader.

Specific information regarding application and course requirements may be obtained from the College of Nursing, Clark Hall, P.O. Box 1881, Milwaukee, WI 53201-1881, (414) 288-3810.

Programs are offered in the following specialties:
Adult-Gerontology Acute Care Nurse Practitioner

Prepares the student to apply advanced clinical assessment and management skills to complex health problems. Graduates of this program care for acutely ill patients, ages 13 and up, in a variety of settings such as acute care facilities, specialty practice offices, and skilled care. Program graduates are academically eligible to take the national certification examination for adult-gerontology acute care nurse practitioner. One year of full-time acute care registered nurse experience is required prior to clinical courses.

The post-master’s certificate is individually designed based on the course work documented on the transcript of the student’s master’s degree. Course work and clinical hours needed for the certificate are based on a detailed plan of study agreed upon prior to admission.

The courses listed are required in the post-master’s curriculum plan unless these courses, or their acceptable equivalent, are documented on the master’s transcript. A minimum of 12 credits is required for the post-master’s certificate. The typical credit requirement range is 21-30 credits.

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<tr>
<td>NURS 6030</td>
<td>Pathophysiological Concepts for Advanced Nursing Practice</td>
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<tr>
<td>NURS 6032</td>
<td>Pharmacology for Advanced Nursing Practice</td>
<td>3</td>
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<tr>
<td>NURS 6035</td>
<td>Advanced Health Assessment Across the Lifespan</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6037</td>
<td>Management of Episodic Health Problems</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6240</td>
<td>Complex Health Problems</td>
<td>3</td>
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<td>NURS 6355</td>
<td>Differential Diagnosis and Advanced Skills for the Acutely Ill Adult</td>
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<td>NURS 6340</td>
<td>Complex Acute Care Problems</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6351</td>
<td>Advanced Nursing Care of the Acutely Ill Adult-Older Adult 1-Clinical</td>
<td>3</td>
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<td>Advanced Nursing Care of the Acutely Ill Adult-Older Adult 2-Clinical</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6353</td>
<td>Advanced Nursing Care of the Acutely Ill Adult-Older Adult 3-Clinical</td>
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</table>

Adult-Gerontology Primary Care Nurse Practitioner

Prepares the student to apply advanced clinical assessment and management skills to episodic and chronic health problems. Care includes health promotion, advanced physical assessment, diagnosis and management of health problems in patients aged 13 and up, in a clinic setting. Program graduates are academically eligible to take the national certification examination for adult gerontology primary care nurse practitioner.

The post-master’s certificate is individually designed based on the course work documented on the transcript of the student’s master’s degree. Course work and clinical hours needed for the certificate are based on a detailed plan of study agreed upon prior to admission.

The courses listed are required in the post-master’s curriculum plan unless these courses, or their acceptable equivalent, are documented on the master’s transcript. A minimum of 12 credits is required for the post-master’s certificate. The typical credit requirement range is 18-30 credits.

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<th>Course Title</th>
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<td>Pharmacology for Advanced Nursing Practice</td>
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<td>Management of Episodic Health Problems</td>
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<td>Complex Health Problems</td>
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<td>NURS 6242</td>
<td>Concepts and Interventions for Health Problems Across the Life-Span</td>
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<td>Health Promotion Across the Life-Span</td>
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<td>Advanced Nursing of Adults-Gerontology 1-Clinical</td>
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<td>Advanced Nursing of Adults-Gerontology 2-Clinical</td>
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<tr>
<td>NURS 6257</td>
<td>Advanced Nursing of Adults-Gerontology 3-Clinical</td>
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Adult-Gerontology Clinical Nurse Specialist

Prepares the student for the care of adults, including knowledge of human responses, health promotion and disease prevention, advanced physical assessment, diagnosis, and nursing management of health problems. Program graduates are academically eligible to take the national certification examination for adult gerontology clinical nurse specialist.

The post-master’s certificate is individually designed based on the course work documented on the transcript of the student’s master’s degree. Course work and clinical hours needed for the certificate are based on a detailed plan of study agreed upon prior to admission.

The courses listed are required in the post-master’s curriculum plan unless these courses, or their acceptable equivalent, are documented on the master’s transcript. A minimum of 12 credits is required for the post-master’s certificate. The typical credit requirement range is 12-30 credits.

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<td>Pathophysiological Concepts for Advanced Nursing Practice</td>
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<tr>
<td>NURS 6032</td>
<td>Pharmacology for Advanced Nursing Practice</td>
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</tbody>
</table>
**Health Systems Leadership**

Hybrid model prepares health care leaders for administrative and executive roles, through nursing focused and interprofessional perspectives. Academically eligible to take certification exams in nursing administration or health care executive.

The post-master’s certificate is individually designed based on the course work documented on the transcript of the student’s master’s degree. Course work and clinical hours needed for the certificate are based on a detailed plan of study agreed upon prior to admission.

The courses listed are required in the post-master’s curriculum plan unless these courses, or their acceptable equivalent, are documented on the master’s transcript. A minimum of 12 credits is required for the post-master’s certificate. The typical credit requirement range is 24-30 credits.

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<td>HEAL 6007</td>
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<td>HEAL 6009</td>
<td>Health Care Systems: Managing Populations and Access</td>
<td>3</td>
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<tr>
<td>HEAL 6830</td>
<td>Quality Improvement Science in Health Care</td>
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<tr>
<td>HEAL 6835</td>
<td>Health Care Informatics, Technology and Professional Issues</td>
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<td>HEAL 6836</td>
<td>Marketing and Economics in Health Care</td>
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<td>HEAL 6837</td>
<td>Managing Human Capital in Health Care</td>
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<td>HEAL 6838</td>
<td>Leading People, Innovation and Strategic Change in Health Care Organizations</td>
<td>3</td>
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<td>HEAL 6839</td>
<td>Healthcare Fiscal Management</td>
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<tr>
<td>NURS 6854</td>
<td>Professional Role Development - Clinical</td>
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Total Credit Hours: 30

**Nurse Midwifery**

Prepares the student for independent management of low risk women during the antepartum, intrapartum and postpartum periods and for primary and gynecologic care of women throughout the life span. Graduates are prepared for collaborative management of women with risk factors. Program graduates are academically eligible to take the national certification examination of the American Midwifery Certification Board.

The post-master’s certificate is individually designed based on the course work documented on the transcript of the student’s master’s degree. Course work and clinical hours needed for the certificate are based on a detailed plan of study agreed upon prior to admission.

The courses listed are required in the post-master’s curriculum plan unless these courses, or their acceptable equivalent, are documented on the master’s transcript. A minimum of 12 credits is required for the post-master’s certificate. The typical credit requirement range is 22-39 credits.

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<tr>
<td>NURS 6032</td>
<td>Pharmacology for Advanced Nursing Practice</td>
<td>3</td>
</tr>
<tr>
<td>NURS 6035</td>
<td>Advanced Health Assessment Across the Lifespan</td>
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</tr>
<tr>
<td>NURS 6037</td>
<td>Management of Episodic Health Problems</td>
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<td>NURS 6740</td>
<td>Advanced Concepts in Women's Health Care Management Across the Life Span</td>
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<td>NURS 6742</td>
<td>Advanced Concepts in Antepartum Management</td>
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<td>NURS 6744</td>
<td>Advanced Concepts in Postpartum and Newborn Management</td>
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</table>
NURS 6746 Professional Issues in APN/DNP Practice 3
NURS 6751 Advanced Concepts in Labor Support 1-3
NURS 6752 Nurse-Midwifery Care During Labor and Birth 5
NURS 6753 Advanced Practicum in Nurse-Midwifery 7

Dual Primary Care and Acute Care Pediatric Nurse Practitioner

Prepares students to practice as a dual-trained pediatric acute care/primary care nurse practitioner. Graduates are prepared to manage well children, pediatric acute and episodic illnesses, complex chronically ill, acutely ill and critically ill children. Graduates are eligible to take the national certification examinations for the acute care and primary care pediatric nurse practitioner specialties. One year of full-time nursing experience in a pediatric acute care setting is required prior to beginning acute care clinical courses.

The post-master’s certificate is individually designed based on the course work documented on the transcript of the student’s master’s degree. Course work and clinical hours needed for the certificate are based on a detailed plan of study agreed upon prior to admission.

The courses listed are required in the post-master’s curriculum plan unless these courses, or their acceptable equivalents, are documented on the master’s transcript. A minimum of 12 credits is required for the post-master’s certificate. The typical credit requirement range is 27-39 credits.

NURS 6030 Pathophysiological Concepts for Advanced Nursing Practice 3
NURS 6032 Pharmacology for Advanced Nursing Practice 3
NURS 6035 Advanced Health Assessment Across the Lifespan 3
NURS 6242 Concepts and Interventions for Health Problems Across the Life-Span 3
NURS 6244 Health Promotion Across the Life-Span 3
NURS 6536 Complex/Chronic Pediatric Health Conditions 3
NURS 6540 Seminar in Child and Family Health 3
NURS 6542 Nursing Therapeutics for Acute/Episodic Illnesses in Children and Adolescents 3
NURS 6551 Advanced Nursing Care of Children and Families 1-Clinical 3
NURS 6552 Advanced Nursing Care of Children and Families 2-Clinical 3
NURS 6640 Nursing Therapeutics for Acute/Critical Illnesses in Children and Adolescents 3
NURS 6652 Acutely/Chronically Ill Children - Clinical 2 3
NURS 6653 Critically Ill Children - Clinical 3 3

Pediatric Acute Care Nurse Practitioner

Prepares the student to manage complex chronically ill, acutely ill, and critically ill children. Program graduates are eligible to take the national certification examination for the acute care pediatric nurse practitioner specialty. One year of full-time acute care pediatric registered nurse experience is required prior to clinical courses.

The post-master’s certificate is individually designed based on the course work documented on the transcript of the student’s master’s degree. Course work and clinical hours needed for the certificate are based on a detailed plan of study agreed upon prior to admission.

The courses listed are required in the post-master’s curriculum plan unless these courses, or their acceptable equivalent, are documented on the master’s transcript. A minimum of 12 credits is required for the post-master’s certificate. The typical credit requirement range is 21-30 credits.

NURS 6030 Pathophysiological Concepts for Advanced Nursing Practice 3
NURS 6032 Pharmacology for Advanced Nursing Practice 3
NURS 6035 Advanced Health Assessment Across the Lifespan 3
NURS 6242 Concepts and Interventions for Health Problems Across the Life-Span 3
NURS 6536 Complex/Chronic Pediatric Health Conditions 3
NURS 6540 Seminar in Child and Family Health 3
NURS 6640 Nursing Therapeutics for Acute/Critical Illnesses in Children and Adolescents 3
NURS 6652 Acutely II Children - Clinical 1 3
NURS 6652 Acutely/Chronically II Children - Clinical 2 3
NURS 6653 Critically II Children - Clinical 3 3
Pediatric Primary Care Nurse Practitioner

Prepares nurses for advanced practice as pediatric nurse practitioners. Graduates are prepared to independently provide healthcare for children and families from simple to complex health issues, usually in primary care settings. Program graduates are academically eligible to take primary care pediatric nurse practitioner national certification examinations. One year of full-time registered nurse experience is required prior to clinical courses.

The post-master's certificate is individually designed based on the course work documented on the transcript of the student's master's degree. Course work and clinical hours needed for the certificate are based on a detailed plan of study agreed upon prior to admission.

The courses listed are required in the post-master's curriculum plan unless these courses, or their acceptable equivalent, are documented on the master's transcript. A minimum of 12 credits is required for the post-master's certificate. The typical credit requirement range is 18 to 30 credits.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>NURS 6030</td>
<td>Pathophysiological Concepts for Advanced Nursing Practice</td>
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<td>NURS 6032</td>
<td>Pharmacology for Advanced Nursing Practice</td>
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<tr>
<td>NURS 6035</td>
<td>Advanced Health Assessment Across the Lifespan</td>
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<tr>
<td>NURS 6244</td>
<td>Health Promotion Across the Life-Span</td>
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<td>NURS 6536</td>
<td>Complex/Chronic Pediatric Health Conditions</td>
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<td>NURS 6551</td>
<td>Advanced Nursing Care of Children and Families 1-Clinical</td>
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<td>NURS 6552</td>
<td>Advanced Nursing Care of Children and Families 2-Clinical</td>
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<tr>
<td>NURS 6553</td>
<td>Advanced Nursing Care of Children and Families 3-Clinical</td>
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Clinical Case Management/Care Coordination Certificate

**MORATORIUM ON ADMISSIONS FOR NEW STUDENTS**

The curriculum for this certificate is designed to provide a solid foundation for healthcare professionals engaged in or seeking a career in Clinical Case Management/Care Coordination (CCM/CC). The four courses in the 12-credit certificate program provides knowledge and content in healthcare finance, ethics, patient/client advocacy, healthcare systems as well as case management, including a 1-credit practicum. Students are expected to complete the course work within three years.

- The student enters the program with a bachelor's degree. Upon completion of the program, the student receives a certificate in clinical case management/care coordination from Marquette University.

- The student may then decide to achieve national certification through passing a credentialing exam offered by a national organization that meets the needs of their specialty. There are more than two dozen organizations identified by the Case Management Society of America that currently sponsor certification exams. The candidate selects a certifying organization depending on their specific discipline and/or specialty. The certificate curriculum, in addition to the candidate's work experience, provides a solid foundation for their chosen exam.

- In addition, the credits students earn from the certificate provide a pathway to a Marquette University master of science in nursing (M.S.N.) or doctor of nursing practice (D.N.P.) graduate degree with a specialty in case management. Up to 12 credits in the certificate program can apply to the master of science in nursing or the doctor of nursing practice.

The constituency served through this program include baccalaureate-prepared registered nurses, social workers/social service professionals, and other healthcare professionals who wish to advance their career in the area of clinical CCM/CC and prepare for an advanced degree and/or national certification. Additionally, community partners and employers are served through preparing professionals with advanced knowledge and competencies in the area of clinical case management.

**Required course work**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HEAL 6841</td>
<td>Health Care Finance</td>
<td>3</td>
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<tr>
<td>HEAL 6845</td>
<td>Case Management</td>
<td>3</td>
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<tr>
<td>NURS 6007</td>
<td>Ethics, Policy and Health Care Advocacy *</td>
<td>3</td>
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<tr>
<td>or HEAL 6931</td>
<td>Topics in Health Care</td>
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<tr>
<td>NURS 6009</td>
<td>Organizational and Systems Leadership *</td>
<td>3</td>
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<tr>
<td>or HEAL 6931</td>
<td>Topics in Health Care</td>
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* Course also offered as HEAL 6931 with corresponding topic.
Health Courses

HEAL 5200. Natural Family Planning. 3 cr. hrs.
Physiological, behavioral, and spiritual aspects important to teaching and using natural family planning.

HEAL 5201. Natural Family Planning Practicum. 3 cr. hrs.
Practical application of theory and skills for teaching natural family planning.

HEAL 5901. Interdisciplinary Palliative Care. 3 cr. hrs.
Provides an understanding of the breadth and depth of palliative care practices and services available to caregivers, patients and their families.

HEAL 5931. Topics in Health. 3 cr. hrs.
Selected topics in Health. The topics will be designated in the Schedule of Classes.

HEAL 6007. Ethics Policy and Advocacy in Health Care Organizations. 3 cr. hrs.
Forum for the interprofessional exploration of ethical issues in healthcare organizations. Introduces ethical theories and principles and applies ethical decision-making processes to clinical and organizational issues. Examines personal values and professional codes and their impact on ethical issues at the individual, institutional and societal levels.

Exploration of healthcare systems, models and implications for leadership. Examines concepts of systems, complexity, change, access, continuum of care, population health and health inequities.

HEAL 6010. Translational Research. 3 cr. hrs.
Principles of evidence-based practice and implementation science applied to the translation of evidence to health care practice. Prereq: NURS 6010, HEAL 8015 or equiv.

HEAL 6049. Outcomes Management. 3 cr. hrs.
Study of patterns of health/illness in specific populations and analysis of risk. Application of epidemiology methods, including biostatistics.

HEAL 6073. Foundations of Learner-Centered Teaching. 3 cr. hrs.
Introduction to the role of the academic educator and developing learner-centered educational experiences to meet cognitive, affective and psychomotor learning outcomes in healthcare education. Explores evidence-based practices for teaching, using cognitive and learning theories, with an emphasis on application of practical strategies to plan and conduct educational experiences in nursing and other healthcare disciplines.

HEAL 6012. Epidemiology. 3 cr. hrs.
Evolution of outcomes management. Exploration of methodologies, assessment instruments and issues that guide outcomes research. Prereq: NURS 6010 or cons. of instr.

HEAL 6013. Assessment and Evaluation of Individuals and Programs in Health Care Education. 3 cr. hrs.
Introduces the role of the academic educator in integrating concepts of assessment and evaluation of individuals and programs within healthcare education. Assessment, feedback and evaluation concepts, models and frameworks are analyzed for applicability to teaching and learning environments in the classroom, clinical settings and programs. Item writing, implementation, analysis and revision pertinent to testing is applied to different environments.

HEAL 6014. Facilitating Learning in Clinical Environments. 3 cr. hrs.
Focuses on the role of the academic educator in clinical environments within healthcare education. Includes application of theory, evidence-based practice, curriculum, instruction, assessment and evaluation strategies to successfully conduct educational experiences in traditional and simulation clinical environments.

HEAL 6015. Facilitating Learning in Classroom and Online Environments. 3 cr. hrs.
Focuses on the role of the academic educator in classroom and online environments within healthcare education. Includes application of theory, evidence-based practice, curriculum, instruction, assessment and evaluation strategies to successfully conduct educational experiences in the classroom and online (synchronous and asynchronous) environments.

HEAL 6820. Health Care Program Development. 3 cr. hrs.
Principles of population assessment, critical analysis of data, program development, implementation and evaluation. Includes one credit of practicum. Prereq: NURS 6009; or cons. of instr.

HEAL 6825. Quality & Patient Safety in Health Care. 3 cr. hrs.
Theories and principles of leadership and organizational change applied to quality and patient safety in health care. Strategies for developing the culture and infrastructure needed to support patient safety and quality improvement initiatives.

HEAL 6830. Quality Improvement Science in Health Care. 3 cr. hrs.
Explores improvement science including quality and patient safety theories, models, methods and tools. Application of measurement, data management and analysis to quality improvement and patient safety challenges.
HEAL 6835. Health Care Informatics, Technology and Professional Issues. 3 cr. hrs.
Examines current health care realities, with an emphasis on the use of technology for policy, regulation, collaboration and interdisciplinary practice issues. Includes information technology applications in healthcare administration, clinical practice and education.

HEAL 6836. Marketing and Economics in Health Care. 3 cr. hrs.
Provides a grounding in basic marketing concepts and practices and an economic framework from which to better understand the health care environment, its challenges and opportunities.

HEAL 6837. Managing Human Capital in Health Care. 3 cr. hrs.
Principles and practices for the acquisition and management of human talent in health care organizations.

HEAL 6838. Leading People, Innovation and Strategic Change in Health Care Organizations. 3 cr. hrs.
Models, competencies and practices of highly effective, ethically driven and data focused strategic leaders in health care. Highlights principles and practices for managing change and innovation.

HEAL 6839. Healthcare Fiscal Management. 3 cr. hrs.
Presents foundational concepts of accounting, budgeting and finance in healthcare environments. Emphasizes the leader’s role in understanding, analyzing and using relevant financial information for management decision making in a healthcare setting.

HEAL 6840. The Environment of Health Care Delivery. 3 cr. hrs.
Overview of U.S. health care system, environmental influences, and current models for health care delivery (e.g., fee for service, modified fee for service, managed care, capitated care, IPOs, HMOs), and the ascendancy/descendency of various models in different geographic regions and in response to economic incentives. Prereq: Enrolled in Graduate School.

HEAL 6841. Health Care Finance. 3 cr. hrs.
Examination of financial principles, budgeting and reimbursement issues in health care. Prereq: NURS 6009; or cons. of instr.

HEAL 6845. Case Management. 3 cr. hrs.
Care services coordination of individuals and families to maximize resources for optimal health outcomes. Emphasis on integration of clinical and management processes. Includes one credit of practicum. Prereq: Health profession experience or cons. of instr.

HEAL 6846. Health Care Informatics. 3 cr. hrs.
Study of informatics in health care with emphasis in information systems and use of communication technology. Includes evaluation of actual and potential applications of informatics in health care administration, clinical practice, research and education.

HEAL 6848. Health Care Policy. 3 cr. hrs.
Concepts of public policy including the political process. Analysis of health care issues using a variety of policy models.

HEAL 6931. Topics in Health Care. 1-4 cr. hrs.
In-depth study of current issues in health care. Course content will be announced each term.

HEAL 6963. Individual Study and Practice. 1-3 cr. hrs.
Individual study and development of in-depth knowledge and skill in a selected area of health care. Experience and activities planned in an area for specialization, based on aptitude and interests of the student. May be repeated for credit. Prereq: Cons. of instr.

HEAL 6965. Applied Health Data Analytics Practicum. 3 cr. hrs.
Application of advanced health care data analytics knowledge in a mentor-guided experience in a practical setting. Prereq: HEAL 8016.

HEAL 6995. Independent Study in Health Care. 1-3 cr. hrs.
Prereq: Cons. of instr.

HEAL 7010. Translational Research. 3 cr. hrs.
Principles of evidence-based practice and implementation science applied to the translation of evidence to health care practice. Prereq: NURS 6010, HEAL 8015 or equiv.

HEAL 7012. Epidemiology. 3 cr. hrs.
Study of patterns of health/illness in specific populations and analysis of risk. Application of epidemiology methods, including biostatistics.

HEAL 7049. Outcomes Management. 3 cr. hrs.
Evolution of outcomes management. Exploration of methodologies, assessment instruments and issues that guide outcomes research. Prereq: NURS 6010 or cons. of instr.

HEAL 7825. Quality and Patient Safety in Health Care. 3 cr. hrs.
Theories and principles of leadership and organizational change applied to quality and patient safety in health care. Strategies for developing the culture and infrastructure needed to support patient safety and quality improvement initiatives.

HEAL 7830. Quality Improvement Science in Health Care. 3 cr. hrs.
Explores improvement science including quality and patient safety theories, models, methods and tools. Application of measurement, data management and analysis to quality improvement and patient safety challenges.

HEAL 7835. Health Care Informatics, Technology and Professional Issues. 3 cr. hrs.
Examines current health care realities, with an emphasis on the use of technology for policy, regulation, collaboration and interdisciplinary practice issues. Includes information technology applications in health care administration, clinical practice and education.
HEAL 8002. Qualitative Research. 3 cr. hrs.
Analysis of key qualitative research methods, issues related to these approaches, and the nature of knowledge generated.

HEAL 8003. Quantitative Research. 3 cr. hrs.
Explores and analyzes advanced quantitative methodologies and issues related to these approaches. Prereq: HEAL 8015, which may be taken concurrently and HEAL 8016, which may be taken concurrently.

HEAL 8010. Health Equity and Disparity. 3 cr. hrs.
Concepts, theories and research relevant to health equity, with emphasis on the multiple contextual influences that contribute to health disparities.

HEAL 8015. Applied Statistics for Health Sciences. 3 cr. hrs.
Overview of applied statistics, including descriptive statistics, probability, sampling, power calculations, bivariate parametric and non-parametric analysis, and introduction to multivariate analysis. Emphasis on appropriate statistics for study design, level of measurement, and interpretation of results.

HEAL 8016. Advanced Applied Statistics. 3 cr. hrs.
An overview of advanced applied statistics focusing on multivariate analysis, including multivariate normal distribution, principle components analysis, factor analysis and cluster analysis. Emphasizes appropriate statistics for study design, level of measurement and interpretation of results. Prereq: HEAL 8015 or equiv., or cons. of instr.

HEAL 8018. Advanced Measurement in Health Care. 3 cr. hrs.
Theory and science of measurement commonly used in health care. Analytic procedures for addressing measurement issues. Prereq: HEAL 8015 or PSYC 8101; HEAL 8016 or PSYC 8102, which may be taken concurrently; or cons. of instr.

Nursing Courses

NURS 5930. Special Topics in Nursing. 1-3 cr. hrs.
In consultation with the Office of the Registrar, may be offered as an experimental course to students, in order to evaluate and determine if a course should be incorporated into the regular curriculum of a program, or can also be used for courses that are in the curriculum approval process pipeline; however, are not yet officially approved; therefore cannot appear in the Bulletin. Once the same course has been offered twice as a Special Topic, it cannot be offered again until it moves through the curriculum approval process and is approved with a regular curriculum course number or one of the standard numbers below. This course number may not be used for a single student studying a particular subject matter.

NURS 5931. Topics in Nursing. 3 cr. hrs.
Selected topics in Nursing. The topics will be designated in the Schedule of Classes.

NURS 6000. Theoretical Foundations of Nursing. 3 cr. hrs.
Exploration of the theoretical basis of nursing practice. Includes nursing, learning, cultural, leadership, developmental and communication theories. Prereq: Admitted to NURS program.

NURS 6001. Health Assessment and Fundamentals 1. 3 cr. hrs.
Development of knowledge and skills needed for comprehensive and focused patient-centered assessments and select nursing interventions. Emphasis on the development of clinical reasoning and communication skills in the provision of culturally appropriate, ethical, and safe evidence-based care. Includes the historical development of nursing and current nursing and healthcare issues. Prereq: Admitted to Direct Entry M.S.N. program.

NURS 6002. Health Assessment and Fundamentals 2. 4 cr. hrs.
Continued development of knowledge and skills in assessment and nursing intervention. Emphasis on ethics, quality and safety in the planning and evaluation of culturally appropriate nursing care. Prereq: NURS 6001; admitted to Direct Entry M.S.N. program.

NURS 6003. Essentials for Nursing Practice. 3 cr. hrs.
Exploration of the nursing profession focusing on communication, the impact of the nurse, fostering an appreciation for human diversity and social justice. Prereq: Admitted to Direct Entry M.S.N. program.

NURS 6005. Concepts and Interventions for the Promotion of Mental Health -- Theory. 3 cr. hrs.
Focuses on understanding the biological, environmental, cultural, intrapersonal and interpersonal factors influencing mental health; development of skills for assessment of mental status and emotional state and intervention modalities; simulated practice responding to common psychiatric problems and immediate interventions for psychiatric emergencies. Prereq: NURS 6001, NURS 6002.

NURS 6007. Ethics, Policy and Health Care Advocacy. 3 cr. hrs.
Impact of ethics and policy on nursing practice, advocacy and social justice in healthcare.

NURS 6009. Organizational and Systems Leadership. 3 cr. hrs.
Study of organizations and systems to impact patient outcomes. Examines concepts of nursing leadership, quality and safety, and health care technology. Prereq: Admitted to NURS program.

NURS 6010. Research and Evidence as a Foundation for Nursing. 3 cr. hrs.
Develop knowledge of research and evidence-based practice processes. Analyze and translate evidence for practice to improve individual, family and community health outcomes. Prereq: Statistics.

NURS 6011. Health Assessment and Fundamentals Theory. 3 cr. hrs.
Develops knowledge and skills needed to complete comprehensive and focused assessments and apply foundational skills for select nursing interventions across the lifespan. Emphasizes the development of clinical reasoning and communication skills in the provision of culturally appropriate, ethical and safe evidence-based care. Prereq: NURS 6013 which must be taken concurrently; admitted to Direct Entry M.S.N. program.
NURS 6013. Health Assessment and Fundamentals Lab/Clinical. 2 cr. hrs.
Perform appropriate comprehensive clinical assessments using therapeutic communication techniques. Differentiate between normal and abnormal assessments findings. Develop a collaborative plan of care and perform appropriate nursing interventions. Prereq: NURS 6011 which must be taken concurrently.

NURS 6015. Pharmacotherapeutics for Nursing Practice. 3 cr. hrs.
Basic principles of pharmacology and pharmacotherapeutics as applied to patients across the life span. Includes nursing implications for administration, patient teaching, and evaluation of safety and effectiveness. Prereq: Admitted to the Direct Entry program.

NURS 6030. Pathophysiological Concepts for Advanced Nursing Practice. 3 cr. hrs.
Investigation of normal physiologic and pathologic mechanisms of disease as a foundation for clinical assessment, decision-making and management. Establishment of knowledge base necessary for the provision of health care in an advanced nursing specialty. Prereq: Admitted to NURS program.

NURS 6032. Pharmacology for Advanced Nursing Practice. 3 cr. hrs.
Preparation of the advanced practice nurse in the area of pharmacology across the lifespan. Topics include pharmacokinetics, pharmacodynamics, major drug categories, and prescribing responsibilities. Prereq: Admitted to NURS program.

NURS 6035. Advanced Health Assessment Across the Lifespan. 3 cr. hrs.
Develop advanced assessment skills to systematically collect, analyze, and interpret data to make sound clinical judgments related to a client's health status across the lifespan. Includes appropriate diagnostics and their interpretation (2 credits didactic, 1 lab credit). Prereq: Admitted to NURS program.

NURS 6037. Management of Episodic Health Problems. 3 cr. hrs.
Assessment, differential diagnoses, interventions and evaluation of adults and older adults with acute, episodic, self-limiting conditions. Prereq: NURS 6032 and NURS 6035, both of which may be taken concurrently.

NURS 6100. Community and Population Health Nursing. 3 cr. hrs.
Integration of community health nursing theory and public health sciences to provide a theoretical basis for aggregate-level care in partnership with communities. Prereq: NURS 6001, NURS 6002, NURS 6030.

NURS 6201. Nursing Concepts and Interventions for the Care of Adults/Older Adults 1 - Theory. 3 cr. hrs.
Focuses on holistic nursing care and clinical reasoning in prevention, assessment and management of select health issues including end-of-life care. Includes concepts and evidence-based practice across the care continuum related to problems with select cardiac, respiratory, digestive and endocrine conditions. Prereq: NURS 6002, NURS 6030, NURS 6015; NURS 6005, NURS 6970, NURS 6201 and NURS 6500, which may be taken concurrently.

NURS 6202. Nursing Concepts and Interventions for the Care of Adults/Older Adults 2 - Theory. 3 cr. hrs.
Focuses on holistic nursing care and clinical reasoning in prevention, assessment and management of adults and older adults with select health issues including end-of-life care. Includes concepts and evidence-based practice across the care continuum related to problems with select endocrine, fluid and electrolytes, neurological, renal, oncologic and orthopedic conditions, as well as operative and trauma care. Prereq: NURS 6970.

NURS 6240. Complex Health Problems. 3 cr. hrs.
Analysis of patterns of common health problems and select treatment modalities common to adults and older adults. Prereq: NURS 6032 and NURS 6035; and NURS 6030, which may be taken concurrently.

NURS 6242. Concepts and Interventions for Health Problems Across the Life-Span. 3 cr. hrs.

NURS 6244. Health Promotion Across the Life-Span. 3 cr. hrs.
Theories and models of health promotion, wellness, and risk reduction. Designing therapeutic interventions to promote the health of individuals and aggregates across the life-span.

NURS 6251. Advanced Nursing of Adults-Gerontology 1-Clinical. 3 cr. hrs.
Application of the clinical judgment process to advanced nursing of adults-older adults. Emphasis on systematic data gathering, documentation, health promotion and risk assessment of adults-older adults across the life cycle. Prereq: NURS 6037; NURS 6240 and NURS 6244, which may be taken concurrently.

NURS 6252. Advanced Nursing of Adults-Gerontology 2-Clinical. 3 cr. hrs.
Illness management in adults-older adults in the context of the family and environment. Emphasis on diagnosis and therapeutic interventions. Prereq: NURS 6251; NURS 6242, which may be taken concurrently.

NURS 6257. Advanced Nursing of Adults-Gerontology 3-Clinical. 3 cr. hrs.
Care of select populations of adults-older adults with emphasis on management of complex illness processes. Focuses on care coordination and aggregate interventions. Prereq: NURS 6252.

NURS 6258. Adult Gerontology Clinical Nurse Specialist 1 - Clinical. 3 cr. hrs.
Development of the clinical nurse specialist role through integration of nursing science to improve health care outcomes of adults and older adults. Focus on the direct care competencies of the role such as advanced assessment of individuals, families and groups and application of evidence based interventions, as well as consultation and education roles. Prereq: NURS 6032 and NURS 6035; NURS 6244, which may be taken concurrently.

NURS 6259. Adult Gerontology Clinical Nurse Specialist 2 - Clinical. 3 cr. hrs.
Development of the Clinical nurse specialist role competencies of systems leadership, coaching, participation in research and evaluation of clinical practice. Continued development of direct care competency skills. Prereq: NURS 6258 and NURS 6242, which may be taken concurrently.
NURS 6355. Differential Diagnosis and Advanced Skills for the Acutely Ill Adult. 3 cr. hrs.
Advanced nursing knowledge and skills for assessment of acutely ill adults using technology. Differential diagnoses, selection and interpretation of appropriate diagnostic tests. Includes 40 hours of clinical practice. Prereq: NURS 6030, NURS 6032, NURS 6035, and NURS 6037, all of which may be taken concurrently.

NURS 6340. Complex Acute Care Problems. 3 cr. hrs.
Analysis of complex pathophysiological conditions commonly encountered among acutely ill adults with selection of appropriate treatment modalities. Emphasis on recognizing patterns of acute illness and on developing clinical reasoning. Prereq: NURS 6030, NURS 6032, NURS 6037, NURS 6240 and NURS 6335, all of which may be taken concurrently.

NURS 6351. Advanced Nursing Care of the Acutely Ill Adult-Older Adult 1-Clinical. 3 cr. hrs.
Development of the clinical judgment process and advanced skills for collaborative care of adult-older adults experiencing acute illness in the hospital-based/tertiary care environment. Emphasis on systematic data gathering, documentation, health promotion, and primary, secondary and tertiary risk reduction strategies. Prereq: NURS 6030, NURS 6032, NURS 6037, NURS 6240, NURS 6335, NURS 6340 all of which may be taken concurrently.

NURS 6352. Advanced Nursing Care of the Acutely Ill Adult-Older Adult 2-Clinical. 3 cr. hrs.

NURS 6353. Advanced Nursing Care of the Acutely Ill Adult-Older Adult 3-Clinical. 3 cr. hrs.
Implementation of the acute care advanced practice role in providing nursing care to complex acutely ill adults-older adults. Emphasis on case management and coordination within and between systems. Prereq: NURS 6352.

NURS 6461. Psychopathology. 3 cr. hrs.
Preparation of the advanced practice nurse in the area of psychopathology as a foundation for clinical assessment, decision making and management. Prereq: NURS 6462, which may be taken concurrently; or cons. of instr.

NURS 6462. Psychopharmacology. 3 cr. hrs.
Preparation of the advanced practice nurse in the area of psychopharmacology. Covers topics of pharmacokinetics, pharmacodynamics, major drug categories, and prescribing responsibilities in the treatment of psychiatric/mental health conditions. Prereq: NURS 6461, which may be taken concurrently; or cons. of instr.

NURS 6463. Psychiatric Mental Health Assessment & Interventions 1. 3 cr. hrs.
Diagnostic reasoning, advanced clinical history taking, and psychiatric assessment in patients and families across the lifespan. Emphasis on the development of therapeutic relationship skills and non-pharmacologic, evidence-based treatment modalities. Prereq: NURS 6461 and NURS 6462.

NURS 6464. Psychiatric Mental Health Assessment & Interventions 2. 3 cr. hrs.
Emphasis on further development of therapeutic relationship skills and nonpharmacologic, evidence-based treatment modalities. Health policy, ethics, and advocacy; technology and information literacy; health delivery system and professional role development. Prereq: NURS 6463.

NURS 6500. Family-Centered Nursing of Children. 3 cr. hrs.
Family-centered nursing of children and adolescents in diverse populations. Focuses on health promotion, maintenance, acute and chronic problems including end-of-life care. Prereq: NURS 6002, NURS 6030.

NURS 6536. Complex/Chronic Pediatric Health Conditions. 3 cr. hrs.
Study of the theoretical and empirical bases for management of children and adolescents with complex and chronic health conditions across the health care continuum. Prereq: NURS 6032, NURS 6035; and NURS 6030, which may be taken concurrently.

NURS 6540. Seminar in Child and Family Health. 3 cr. hrs.
Exploration of advanced concepts related to the physical, psychosocial and developmental dimensions of child and adolescent health. Analysis of family theories and models relevant to advanced practice nursing of children. Prereq: Admitted to NURS program.

NURS 6452. Nursing Therapeutics for Acute/Episodic Illnesses in Children and Adolescents. 3 cr. hrs.
Study of the theoretical basis for the diagnosis and case management of children and adolescents with common age-related acute or episodic illness. Focuses on differential diagnosis and nursing therapeutics. Prereq: Admitted to NURS program.

NURS 6551. Advanced Nursing Care of Children and Families 1-Clinical. 3 cr. hrs.
Assessment and intervention for children and families regarding common health concerns, with an emphasis on well child care. Prereq: NURS 6030; which may be taken concurrently, and NURS 6032 and NURS 6540; which may be taken concurrently, and NURS 6035.

NURS 6552. Advanced Nursing Care of Children and Families 2-Clinical. 3 cr. hrs.
Assessment and intervention for children and families with common to complex health concerns. Beginning development of indirect care skills. Prereq: NURS 6551.

NURS 6553. Advanced Nursing Care of Children and Families 3-Clinical. 3 cr. hrs.
Assessment and intervention for children and families with common to complex health concerns. Refinement of direct and indirect care skills. Prereq: NURS 6009 and NURS 6552.

NURS 6640. Nursing Therapeutics for Acute/Critical Illnesses in Children and Adolescents. 3 cr. hrs.
Focuses on differential diagnosis, clinical management and nursing therapeutics for hospitalized children and adolescents with acute or critical illness. Prereq: NURS 6032, NURS 6035; and NURS 6030, which may be taken concurrently.
NURS 6651. Acutely Ill Children - Clinical 1. 3 cr. hrs.
Assessment and intervention for children and families regarding common acute health concerns. Includes clinical hours that focus on the health care needs of the well child/child with illness not requiring hospitalization, as well as clinical practice with acutely ill hospitalized children. Prereq: NURS 6032, NURS 6035; and NURS 6030, which may be taken concurrently.

NURS 6652. Acutely/Chronically Ill Children - Clinical 2. 3 cr. hrs.
Assessment, intervention and clinical management of acute/chronic illness in children. Collaboration with physicians and other health care providers and agencies to provide and coordinate services. Prereq: NURS 6651 or NURS 6652; NURS 6030; NURS 6540, which may be taken concurrently.

NURS 6653. Critically Ill Children - Clinical 3. 3 cr. hrs.

NURS 6700. Maternity Nursing and Women's Health - Theory. 3 cr. hrs.
Focuses on nursing, health promotion, families in transition and adaptation from preconception through postpartum, perinatal loss, internatal care, genetics and women's health from a global perspective. Prereq: NURS 6002, NURS 6030.

NURS 6740. Advanced Concepts in Women's Health Care Management Across the Life Span. 3 cr. hrs.
Strategies to promote health and wellness across the life span in the provision of primary care for women, emphasizing nurse-midwifery management. Examines sociocultural implications in the environment impacting upon clients and providers. Prereq: Admitted to NURS program; and NURS 6032, which may be taken concurrently; or cons. of instr.

NURS 6742. Advanced Concepts in Antepartum Management. 3 cr. hrs.
Study and application of nurse-midwifery process strategies to promote biopsychosocial and spiritual health in women and families experiencing pregnancy. Includes families with potential health deviations. Prereq: NURS 6740; or cons. of instr.

NURS 6744. Advanced Concepts in Postpartum and Newborn Management. 3 cr. hrs.
Postpartum nurse-midwifery management of mothers, neonates, and families, including those with potential health deviations. Prereq: NURS 6740 or cons. of instr.

NURS 6746. Professional Issues in APN/DNP Practice. 3 cr. hrs.
Overview of history, trends and dynamic social forces affecting education, regulation, growth and development of APN/DNP professional practice. Examination of legislation, policy, practice issues and leadership in providing quality care for diverse populations. Prereq: Taken in the final semester of the BSN-DNP program; or admitted to master's nurse-midwifery program.

Study of the science of labor support. Special attention to non-pharmacologic approaches and contemporary childbirth education options. Prereq: Admitted to master's nurse-midwifery program; NURS 6742 or cons. of instr.

NURS 6752. Nurse-Midwifery Care During Labor and Birth. 5 cr. hrs.
Nurse-midwifery management of women during the intrapartal period. Assessment of maternal-fetal status, with appropriate interventions and non-technologic approaches, in the context of family-centered care. Includes theory and practicum. Prereq: Admitted to NURS program; and NURS 6037 and NURS 6740 and NURS 6744; or cons. of instr.

NURS 6753. Advanced Practicum in Nurse-Midwifery. 7 cr. hrs.
Development of nurse-midwifery practice role through intensive clinical experience. Strengthening clinical practice and leadership for professional challenges in nurse-midwifery. Practicum hours to be determined by individual student's progression through program experience requirements. Prereq: Admitted to NURS program; NURS 6752.

NURS 6854. Professional Role Development - Clinical. 3 cr. hrs.
Integration and application of leadership knowledge and skills in role development and transition. Opportunity to demonstrate synthesis of leadership concepts to enhance role effectiveness in real world setting. Prereq: HCAD 6535, HCAD 6540, both of which may be taken concurrently; or cons. of instr.

NURS 6931. Topics in Nursing. 1-4 cr. hrs.
In-depth study of current trends in nursing. Subject to be announced each term. Prereq: Admitted to NURS program.

NURS 6963. Individual Study and Practice. 1-3 cr. hrs.
Individual study and development of in-depth knowledge and skill in a selected area of nursing. Experience and activities planned in an area for specialization, based on aptitude and interests of the student. May be repeated for credit. Prereq: Admitted to NURS program; and cons. of instr.

NURS 6965. Psychiatric Mental Health Nurse Practitioner Practicum 1. 2 cr. hrs.
Beginning assessment, management and evaluation of outcomes in psychiatric mental health settings which may include children, adolescents, adults and older adults with emphasis on pharmacologic and non-pharmacologic management of common psychiatric mental health concerns. Prereq: NURS 6463, which may be taken concurrently.

NURS 6966. Psychiatric Mental Health Nurse Practitioner Practicum 2. 2 cr. hrs.
Advanced assessment, management and evaluation of outcomes in psychiatric mental health settings which may include children, adolescents, adults and older adults with emphasis on pharmacologic and non-pharmacologic management of psychiatric mental health concerns. Prereq: NURS 6464, which may be taken concurrently; NURS 6965.
NURS 6967. Psychiatric Mental Health Nurse Practitioner Practicum 3. 2 cr. hrs.
Advanced assessment, management and evaluation of outcomes in psychiatric mental health settings which may include children, adolescents, adults and older adults with emphasis on complex pharmacologic and non-pharmacologic management of psychiatric mental health concerns. Prereq: NURS 6966.

NURS 6970. Nursing Care for Patients with Chronic Conditions - Clinical. 4 cr. hrs.
Comprehensive patient-centered nursing care of adults or children with chronic conditions across the care continuum. Emphasizes health promotion, health maintenance and palliation. Includes simulations. Prereq: NURS 6002, NURS 6015, NURS 6030; NURS 6005, NURS 6201 and NURS 6500, which may be taken concurrently.

NURS 6971. Nursing Care for Patients with Acute Conditions - Clinical. 4 cr. hrs.
Comprehensive patient-centered nursing care of adults or children with acute conditions. Emphasizes health promotion, health maintenance, restoration, palliation and end of life. Includes simulation. Prereq: NURS 6970, NURS 6005, NURS 6201, NURS 6500; NURS 6700, NURS 6100, and NURS 6200, which may be taken concurrently.

NURS 6973. Professional Nursing Practice - Clinical. 3 cr. hrs.
A clinical immersion experience emphasizing patient-centered nursing care with a focus on clinical outcomes and the care management environment. Prereq: NURS 6971.

NURS 6975. Family Nurse Practitioner Practicum. 3 cr. hrs.
Assessment and intervention in primary care for clients across the lifespan with emphasis on management of common and complex health concerns. Refinement of direct and indirect care skills. Prereq: Admitted to Post-master's FNP program and cons. of dept. ch.

NURS 6976. Transition to Nursing Practice and Leadership - Clinical. 3 cr. hrs.
Advanced clinical immersion experience to coordinate and implement care of a caseload of clients, in coordination with an interprofessional team. Emphasizes the transition to a leader in care delivery as a beginning master's prepared nurse. Prereq: NURS 6973.

NURS 6995. Independent Study in Nursing. 1-3 cr. hrs.
Prereq: Admitted to NURS program; and cons. of instr.

NURS 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Admitted to NURS program; approved thesis proposal; cons. of associate dean.

NURS 7810. Scientific Foundations of Nurse Anesthesia Practice. 3 cr. hrs.
Application of basic principles of chemistry, mathematics and physics in nurse anesthesia practice. Includes analysis of anesthesia equipment and monitoring devices. Prereq: Admitted to nurse anesthesia program.

NURS 7811. Nurse Anesthesia Advanced Physiology. 4 cr. hrs.
Application of advanced cell biology and systems physiology applied to nurse anesthesia practice. Prereq: NURS 7810.

NURS 7812. Nurse Anesthesia Neurobiology. 4 cr. hrs.
Study of the structure and function of the human nervous system applied to normal and abnormal functions across the lifespan. Focus on advanced anatomy, histology, neurobiology and neurology as related to anesthesia. Prereq: NURS 7810.

NURS 7813. Nurse Anesthesia Basic Principles. 3 cr. hrs.
Comprehensive foundational content for nurse anesthesia practice. Focus on general clinical skills in the practice of anesthesia. Prereq: NURS 7810.

Anesthesia management principles for surgical specialty areas including pertinent foundations in anatomy, physiology, pathophysiology and pharmacology. Prereq: NURS 7813.

NURS 7815. Professional Issues in Nurse Anesthesia DNP Practice. 3 cr. hrs.
Issues germane to nurse anesthesia practice: history, role, ethics and legal/professional issues. Prereq: Admitted to the nurse anesthesia program.

NURS 7816. Nurse Anesthesia Advanced Pharmacology. 3 cr. hrs.
Comprehensive study of anesthetic agents and adjuvants along with drugs frequently encountered in the perioperative setting. Pharmacokinetics, pharmacodynamics, potential drug interactions, the impact of aging and various disease processes on dosing and administration of these drugs. Prereq: NURS 7810, NURS 7813.

NURS 7817. Nurse Anesthesia Advanced Principles 2. 3 cr. hrs.
Anesthetic management principles for obstetric and pediatric patients including pertinent foundations in anatomy, physiology, pathophysiology and pharmacology. Prereq: NURS 7814.

NURS 7931. Topics in Nursing. 1-3 cr. hrs.
Selected topics in Nursing. Specific topics and prerequisites will be designated in the Schedule of Classes.

NURS 7955. Health Care Management and Leadership - Clinical. 3 cr. hrs.
Integration and application of management and leadership concepts and skills in health care settings, working with nurses and other disciplines. Students participate in real world analyses and management of process change. Prereq: NURS 6854.

NURS 7970. Nurse Anesthesia Clinical 1. 1 cr. hr.
Clinical practice focused on development of nurse anesthesia practice within surgical specialty areas. Prereq: NURS 7810, NURS 7811, NURS 7812 and NURS 7813.
NURS 7971. Nurse Anesthesia Clinical 2. 2 cr. hrs.
Clinical practica focused on development of nurse anesthesia practice within surgical specialty areas. Prereq: NURS 7970.

NURS 7972. Nurse Anesthesia Residency 1. 4 cr. hrs.
Introductory mentored nurse anesthesia clinical. Prereq: NURS 7817, NURS 7971.

NURS 7973. Nurse Anesthesia Residency 2. 4 cr. hrs.
Intermediate mentored nurse anesthesia clinical. Prereq: NURS 7972.

NURS 7974. Nurse Anesthesia Residency 3. 4 cr. hrs.
Advanced mentored nurse anesthesia clinical. Prereq: NURS 7973.

NURS 7980. Residency for DNP with Adults/Older Adults Primary Care. 3 cr. hrs.

NURS 7981. Residency for DNP with Acutely Ill Adults. 3 cr. hrs.

NURS 7983. Residency for DNP with Children and Families in Primary Care. 3 cr. hrs.

NURS 7984. Residency for DNP with Ill Children/Adolescents. 3 cr. hrs.
Clinical immersion in practice with children and/or adolescents with acute/chronic illness. Emphasis on advanced, evidence-based care management in the context of family, community and culture. Prereq: NURS 6653.

NURS 7985. Residency for DNP in Nurse-Midwifery. 3 cr. hrs.

NURS 7986. Residency for DNP in Health Care Systems Leadership. 3 cr. hrs.

NURS 7987. Nurse Anesthesia Specialty Immersion 1. 4 cr. hrs.
Selected advanced specialty immersion in nurse anesthesia. Prereq: NURS 7974.

NURS 7988. Nurse Anesthesia Specialty Immersion 2. 4 cr. hrs.
Selected continued advanced specialty immersion in nurse anesthesia. Prereq: NURS 7987.

NURS 7996. Doctor of Nursing Practice Capstone 1. 3 cr. hrs.
Identification and development of an evidence-based capstone project that focuses on the scholarship of practice. Integration of knowledge obtained in prior D.N.P. course work. Prereq: HEAL 7010; final year of program.

NURS 7997. Doctor of Nursing Practice Capstone 2. 3 cr. hrs.
Implementation, evaluation and dissemination of an evidence-based capstone project that focuses on the scholarship of practice. Prereq: NURS 7996.

NURS 8000. Nursing Knowledge Development. 3 cr. hrs.
Examination of paradigmatic, theoretical, and conceptual dimensions of the nursing discipline with an emphasis on strategies for knowledge generation. Prereq: PHIL 6430 which may be taken concurrently.

NURS 8020. Nursing Education Research, Policy, and Leadership. 3 cr. hrs.
Philosophical foundations, theories, nursing education research and policy. Strategies to improve nursing education for the care of vulnerable populations.

NURS 8980. Nursing Research Seminar and Practicum. 1-3 cr. hrs.
Guided individual research experience. Develops skills related to grant writing, dissertation, and the conduct of research projects. Prereq: HEAL 8002 or HEAL 8003 or concurrent.

NURS 8981. Residency in Nursing Education. 1-3 cr. hrs.
Application of knowledge, theories, and skills to academic teaching in nursing. Prereq: Cons. of associate dean for graduate programs and research.

NURS 8982. Nursing Research and Practicum II. 1-3 cr. hrs.
Advanced work in guided individual research experience. Students develop advanced skills related to grant writing, dissertation and conduct of research projects. Prereq: NURS 8980.

NURS 8995. Independent Study in Nursing. 1-3 cr. hrs.
Investigations in selected areas of Nursing. Prereq: Cons. of instr. and cons. of dept. ch.

NURS 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Admitted to NURS program; and cons. of dept. ch.

NURS 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.
NURS 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9977. Field Placement Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9978. Field Placement Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9979. Field Placement Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.

NURS 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.; and admitted to NURS program.
Philosophy (PHIL)

Chairperson: Jessica Wolfendale, Ph.D.
Philosophy Graduate Programs website (https://www.marquette.edu/philosophy/graduate.php)

Degrees Offered

Master of Arts (https://www.marquette.edu/grad/programs-philosophy.php), students are admitted under Plan B (non-thesis option) but Plan A (thesis option) is also offered; Doctor of Philosophy (https://www.marquette.edu/grad/programs-philosophy-phd.php)

Note: Students in the social and applied philosophy specialization are admitted under Plan B only.

Program Descriptions

The Philosophy Department's master's program in the history of philosophy and the doctoral program are based on the history of philosophy, ancient through contemporary, as the necessary experience for a mind critically able to face contemporary philosophical issues. The master's program in social and applied philosophy provides rigorous philosophical training for individuals who are interested in working in a variety of non-academic contexts or for pursuing further graduate studies.

Prerequisites for Admission

Applicants are expected to have 18 semester hours of undergraduate philosophy course work, six hours of which should be in survey courses (history of philosophy) for admission to the doctoral program or the master of arts program with a specialization in history of philosophy.

Application Deadline

Applicant files must be completed by Feb. 1 for admission consideration. Applications for admission received after this date will be considered as space permits.

Application Requirements

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. A statement of purpose outlining applicant’s achievements and intentions in philosophy.
4. Letters of recommendation from at least three professors or professionals familiar with applicant’s academic work and/or academic background.
5. A sample of philosophical writing.
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

Dual Program of Study

M.A.-J.D. Degree

The Department of Philosophy, in conjunction with the Law School, offers a program of dual study leading to a master’s degree in philosophy and a juris doctor degree. Students seeking admission to the dual program must apply to both the Graduate School and the Law School and must meet the admission requirements for each. Students start this dual program as a law student. Upon completion of the law program, students will be officially admitted to the philosophy program for completion of the remainder of the dual program.

Dual program students complete 81 credit hours in the Law School, 21 credit hours in philosophy and nine credit hours in dual program courses.

To participate in the M.A.-J.D. program in social and applied philosophy or in history of philosophy, the law student must receive the prior written approval of the associate dean for academic affairs in the Law School and must comply with the regulations of the Graduate School. The student must have completed 27 credit hours at the Law School with a cumulative average of 3.000 before entering either master of arts program in philosophy. Students may seek admission to the dual program at any time, but must complete both programs in four years (six years for part-time students), in accord with Law School academic regulations.

In general, dual program students will pay tuition at the full-time (flat tuition) Law School rate while a full-time law student, regardless of whether or not they are taking additional graduate courses. Upon receiving the juris doctor degree, dual program students will pay Graduate School tuition at the per credit rate for graduate courses. Part-time law students will pay the per credit Law School rate for all courses.
Additional details about the M.A.-J.D. program are available on the Philosophy Department website (http://www.marquette.edu/phil/grad.shtml), at the Philosophy Department office or from the Law School Admissions office.

**Philosophy Master’s Requirements**

**Specializations:** History of Philosophy, Social and Applied Philosophy

### History of Philosophy

**(Plan A or Plan B master’s)**

Course work in either Plan A or B must include:

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<thead>
<tr>
<th>Course Code/Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PHIL 6605 Plato</td>
<td>3</td>
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<tr>
<td>or PHIL 6610 Aristotle</td>
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<tr>
<td>PHIL 6620 Augustine</td>
<td>3</td>
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<td>or PHIL 6640 St. Thomas Aquinas</td>
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<tr>
<td>PHIL 6650 Descartes</td>
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<tr>
<td>or PHIL 6655 Hume</td>
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<td>or PHIL 6660 Kant</td>
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<td>or PHIL 6662 Hegel</td>
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One course in the history of philosophy to be approved by the director of graduate studies

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<thead>
<tr>
<th>Course Code/Title</th>
<th>Credits</th>
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<tr>
<td>PHIL 5931 Topics in Philosophy</td>
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<tr>
<td>PHIL 6320 Natural-Law Ethics</td>
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<tr>
<td>PHIL 6410 Philosophy of Process</td>
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<tr>
<td>PHIL 6480 Recent Christian Metaphysics</td>
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<tr>
<td>PHIL 6510 Philosophy of Religion</td>
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<tr>
<td>PHIL 6530 Philosophy of History</td>
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<td>PHIL 6652 Post-Cartesian Rationalism</td>
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<td>PHIL 6654 Locke/Berkeley</td>
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<td>PHIL 6664 Husserl</td>
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<td>PHIL 6670 Classical American Philosophy</td>
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<td>PHIL 6680 Early Analytic Philosophy</td>
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<td>PHIL 6690 German Phenomenology-Existentialism</td>
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<td>PHIL 6695 French Phenomenology-Existentialism</td>
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<td>PHIL 6953 Text/Seminar on Ancient Philosophy</td>
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<td>PHIL 6954 Text/Seminar on Early or High Medieval Philosophy</td>
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<td>PHIL 6955 Text/Seminar on Later Medieval or Renaissance Philosophy</td>
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<td>PHIL 6957 Text/Seminar on Nineteenth-Century Philosophy</td>
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<tr>
<td>PHIL 6958 Text/Seminar on Twentieth-Century Philosophy</td>
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</table>

A master’s student may choose to be in either Plan A (thesis option) or Plan B (course option). Students are assumed to be in Plan B unless a formal request is made to and approved by the Graduate School.

In Plan A, the student must complete 24 credit hours of graduate-level course work and six credit hours of thesis work, pass a comprehensive examination and submit an approved thesis. Also, the student must have reading knowledge of French or German, or another foreign language approved by the department. At least 18 credits of the course work requirement must be in philosophy and must include the four core courses as outlined above. The comprehensive examination requires a critical knowledge of the philosophical classics and of contemporary philosophical literature.

In Plan B, the student must complete 30 credit hours of graduate-level course work and pass a comprehensive examination. No essay or foreign language is required for the Plan B master’s program. At least 18 credits of the course work requirement must be in graduate-level philosophy courses, including one course in ethics and the four core courses as outlined above. Up to six credit hours of upper division undergraduate courses approved for graduate credit may be counted toward this degree. Courses must be individually approved by the director of the graduate program. Plan B master’s degrees are considered terminal degrees by the Department of Philosophy.

### Social and Applied Philosophy

**(Plan B master’s only)**

Course work must include:
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
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<td>PHIL 6310</td>
<td>History and Theory of Ethics</td>
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<tr>
<td>PHIL 6960</td>
<td>Seminar in Applied/Professional Philosophy</td>
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<tr>
<td>PHIL 6605</td>
<td>Plato</td>
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<td>PHIL 6610</td>
<td>Aristotle</td>
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<td>PHIL 6620</td>
<td>Augustine</td>
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<tr>
<td>PHIL 6640</td>
<td>St. Thomas Aquinas</td>
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<td>one of the following:</td>
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<td>PHIL 6650</td>
<td>Descartes</td>
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<tr>
<td>PHIL 6652</td>
<td>Post-Cartesian Rationalism</td>
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<tr>
<td>PHIL 6655</td>
<td>Hume</td>
<td></td>
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<tr>
<td>PHIL 6660</td>
<td>Kant</td>
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<tr>
<td>PHIL 6662</td>
<td>Hegel</td>
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<tr>
<td>PHIL 6965</td>
<td>Practicum in Philosophy (may be taken for 6 credits OR 3 credits with an additional 3 credit philosophy elective)</td>
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<td></td>
<td>Two electives from the graduate philosophy course offerings</td>
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<tr>
<td>PHIL 5931</td>
<td>Topics in Philosophy</td>
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<td>PHIL 6120</td>
<td>Problems in Logic</td>
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<tr>
<td>PHIL 6320</td>
<td>Natural-Law Ethics</td>
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<tr>
<td>PHIL 6340</td>
<td>Aesthetics</td>
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<td>PHIL 6410</td>
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<td>Philosophy of Religion</td>
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<td>PHIL 6530</td>
<td>Philosophy of History</td>
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<td>PHIL 6630</td>
<td>Plotinus and Early Christian Neo-Platonists</td>
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<td>PHIL 6635</td>
<td>Medieval Islamic Thought</td>
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<td>PHIL 6654</td>
<td>Locke/Berkeley</td>
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<td>PHIL 6664</td>
<td>Husserl</td>
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<td>Classical American Philosophy</td>
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<td>German Phenomenology-Existentialism</td>
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<td>Political Philosophy</td>
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<td>Text/Seminar on Ancient Philosophy</td>
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<td>Text/Seminar on Early or High Medieval Philosophy</td>
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<td>PHIL 6955</td>
<td>Text/Seminar on Later Medieval or Renaissance Philosophy</td>
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<td>Text/Seminar on Nineteenth-Century Philosophy</td>
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<td>Text/Seminar on Twentieth-Century Philosophy</td>
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<td>PHIL 6959</td>
<td>Seminar in Philosophy</td>
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<td>PHIL 6970</td>
<td>Seminar on Teaching Philosophy</td>
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<td>PHIL 6995</td>
<td>Independent Study in Philosophy</td>
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<td>Two graduate level cognate courses from outside philosophy</td>
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<td>Total Credit Hours</td>
<td>30</td>
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</table>
The cognate courses are to be approved by the student's adviser and the coordinator of the master of arts social and applied philosophy specialization. No comprehensive exam or foreign language is required for the Plan B master's program. Plan B master's degrees are considered terminal degrees by the Philosophy Department.

**Accelerated Bachelor's-Master's Degree Program**

*(PLAN B MASTER'S ONLY)*

The accelerated degree program (ADP) in philosophy is designed to give Marquette University undergraduates a more efficient means to obtain a master's degree in philosophy. Interested Marquette students in their junior year (or equivalent) must meet the following criteria in order to apply for the ADP:

- Students must have a minimum cumulative undergraduate GPA of 3.000.
- Students must have taken at least 18 credits of course work in philosophy (6 courses).

Students accepted into the program may transfer up to 12 credits of approved 5000-level courses into their graduate program. Undergraduates participating in this program are granted early admission to the Graduate School and are allowed to take specific graduate-level courses during their senior year.

The ADP in philosophy is not restricted to philosophy majors. For additional information about requirements, interested students should contact the Department of Philosophy.

Those who have completed a master of arts in philosophy have gone on to excellent philosophy doctoral programs or law schools, and gained employment in the non-profit and private sectors. Graduate courses in our program offer students the possibility to pursue topics of interest to them in more depth than they are able to do in undergraduate classes. These courses provide smaller class sizes, more opportunities for participation, and an emphasis on the refinement of student research skills.

**Philosophy Doctoral Requirements**

A doctoral student in the philosophy program must complete a 63-credit program of study defined on an approved Doctoral Program Planning Form. Normally, the student must complete 51 credit hours of graduate-level course work beyond the baccalaureate degree. At least 30 of these must be completed after admission to the doctoral program. In addition, students must complete 12 credit hours of dissertation work. The student also must complete the foreign language requirement, display an understanding of the fundamentals of predicate logic demonstrated either by course work or by a department exam, a qualifying paper with an oral defense, and submit and successfully defend a dissertation.

**Program Requirements**

<table>
<thead>
<tr>
<th>History of Philosophy Courses</th>
<th>12</th>
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<tbody>
<tr>
<td>Ancient Philosophy - Choose one of the following:</td>
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<tr>
<td>PHIL 6605 Plato</td>
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<td>PHIL 6610 Aristotle</td>
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<tr>
<td>PHIL 6630 Plotinus and Early Christian Neo-Platonists</td>
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<tr>
<td>PHIL 6953 Text/Seminar on Ancient Philosophy</td>
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<td>Medieval Philosophy - Choose one of the following:</td>
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<tr>
<td>PHIL 6620 Augustine</td>
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<td>PHIL 6635 Medieval Islamic Thought</td>
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<td>PHIL 6640 St. Thomas Aquinas</td>
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<td>PHIL 6954 Text/Seminar on Early or High Medieval Philosophy</td>
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<td>PHIL 6955 Text/Seminar on Later Medieval or Renaissance Philosophy</td>
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<td>Modern Philosophy - Choose one of the following:</td>
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<tr>
<td>PHIL 6650 Descartes</td>
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<td>PHIL 6652 Post-Cartesian Rationalism</td>
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<td>PHIL 6654 Locke/Berkeley</td>
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<td>PHIL 6655 Hume</td>
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<td>PHIL 6660 Kant</td>
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<td>One additional course in the history of philosophy to be approved by the director of graduate studies. This requirement could be satisfied by an additional course in Ancient, Medieval, Modern, or by one of the following:</td>
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<tr>
<td>PHIL 6662 Hegel</td>
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<td>PHIL 6664 Husserl</td>
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<td>PHIL 6670 Classical American Philosophy</td>
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<td>PHIL 6680</td>
<td>Early Analytic Philosophy</td>
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<td>PHIL 6685</td>
<td>Contemporary Analytic Philosophy</td>
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<td>PHIL 6690</td>
<td>German Phenomenology-Existentialism</td>
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<td>PHIL 6695</td>
<td>French Phenomenology-Existentialism</td>
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<td>PHIL 6957</td>
<td>Text/Seminar on Nineteenth-Century Philosophy</td>
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<td>PHIL 6958</td>
<td>Text/Seminar on Twentieth-Century Philosophy</td>
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**Systematic Courses**

One course in metaphysics or epistemology, or philosophy of science to be approved by the director of graduate studies. (Choose one of the following.)

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PHIL 6420</td>
<td>Philosophy of Language</td>
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<tr>
<td>PHIL 6430</td>
<td>Philosophy of Knowledge</td>
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<td>Philosophy of Science</td>
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<td>Philosophy of Freedom</td>
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<td>PHIL 6470</td>
<td>Problems in Metaphysics</td>
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<tr>
<td>PHIL 6480</td>
<td>Recent Christian Metaphysics</td>
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</table>

One course in ethics or social/political philosophy or aesthetics to be approved by the director of graduate studies - Choose one of the following:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PHIL 6310</td>
<td>History and Theory of Ethics</td>
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<td>PHIL 6320</td>
<td>Natural-Law Ethics</td>
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<tr>
<td>PHIL 6330</td>
<td>Problems in Ethics</td>
</tr>
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<td>PHIL 6340</td>
<td>Aesthetics</td>
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<tr>
<td>PHIL 6460</td>
<td>Philosophy of Freedom</td>
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<td>PHIL 6710</td>
<td>Political Philosophy</td>
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<td>PHIL 6750</td>
<td>Philosophy of Law</td>
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<td>PHIL 6960</td>
<td>Seminar in Applied/Professional Philosophy</td>
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**Elective Courses**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PHIL 6970</td>
<td>Seminar on Teaching Philosophy</td>
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<tr>
<td>PHIL 8999</td>
<td>Doctoral Dissertation</td>
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</table>

**Total Credit Hours** 63

- An approved PHIL 5931 Topics in Philosophy, PHIL 5953 Undergraduate Seminar, or PHIL 6959 Seminar in Philosophy may satisfy any requirement listed above, depending on topic.
- Content requirement: At least one course must be in the Catholic intellectual tradition, for example, PHIL 6620 Augustine, PHIL 6640 St. Thomas Aquinas or a course approved by the director of graduate studies. A course may be double-counted to satisfy both an area and content requirement. A course may satisfy at most two requirements.
- Content requirement: At least one course must be on a topic that addresses questions of social justice. A course may be double-counted to satisfy both an area and content requirement. A course may satisfy at most two requirements.
- With written approval from the department chair, up to 6 credit hours of required course work may be taken in other fields. Once the student commences study in the philosophy Ph.D. program, 3 credits may be taken at another university in our consortium.
- Students in the Ph.D. program need to demonstrate a reading knowledge of a language other than English. The typical choices are French, German, Latin, Greek or Arabic; however, any other language necessary to the student’s study and approved by the director of graduate studies can be chosen. The language requirement must be satisfied before the student becomes a doctoral candidate (ABD standing) and may be completed by passing an appropriate language course or a departmental exam.
- Students must demonstrate competence in symbolic logic, either through course work, acceptable undergraduate courses or a departmental exam.
- Students must submit one qualifying paper. This paper is assessed by a committee of three faculty. Generally, these are a minimum of 5,000 words.

**Courses**

**PHIL 5000. Modern Logic. 3 cr. hrs.**

Introduction to modern symbolic logic, with primary emphasis on translation into symbolic form and natural deduction. Propositional logic and predicate logic with identity are covered.

**PHIL 5931. Topics in Philosophy. 1-3 cr. hrs.**

Lectures and discussions in an area which, because of its topicality, is not the subject of a regular course. The special topics will be designated in the Schedule of Classes.
PHIL 5953. Undergraduate Seminar. 3 cr. hrs.
Designed to initiate a selected group of qualified undergraduates in the technique and discipline of scholarly research by concentrated work in a restricted field. Critical reading and analysis of sources. Specific subjects of seminars to be announced in the Schedule of Classes.

PHIL 6120. Problems in Logic. 3 cr. hrs.
An investigation into logical and meta-logical problems of perennial and contemporary relevance. Prereq: Cons. of dept. ch.

PHIL 6310. History and Theory of Ethics. 3 cr. hrs.
A theoretical investigation into the moral dimensions of human life. Covers the principal traditions in Western moral philosophy as well as significant work in contemporary moral philosophy. Prereq: Cons. of dept. ch.

PHIL 6320. Natural-Law Ethics. 3 cr. hrs.
Classical and/or contemporary theories of natural law. Prereq: Cons. of dept. ch.

PHIL 6330. Problems in Ethics. 3 cr. hrs.
Considers various metaethical and normative problems, such as: values; the justification and nature of ethical norms; moral responsibility; moral failure; the relation of morality to religion, law, and aesthetics. Prereq: Cons. of dept. ch.

PHIL 6340. Aesthetics. 3 cr. hrs.
Considers one or more of the following problems in aesthetic theory: expression, representation, art and knowledge, aesthetics and society, method. Prereq: Cons. of dept. ch.

PHIL 6410. Philosophy of Process. 3 cr. hrs.
An introduction to the metaphysical thought process of philosophers such as Bergson and Whitehead. Prereq: Cons. of dept. ch.

PHIL 6420. Philosophy of Language. 3 cr. hrs.
Studies topics such as the structure and function of language, philosophy and linguistics, and language and mind. Considers philosophers such as Austin, Morris and Chomsky. Prereq: Cons. of dept. ch.

PHIL 6430. Philosophy of Knowledge. 3 cr. hrs.
A study of major epistemological problems and theories of knowledge. Prereq: Cons. of dept. ch.

PHIL 6440. Philosophy of Science. 3 cr. hrs.
A survey of basic problems and methods in contemporary philosophy of science. Emphasizes problems arising from current space-time theory, quantum mechanics, and the use of variant models and methodologies in the exact sciences. Prereq: Cons. of dept. ch.

PHIL 6450. Philosophy of Mind. 3 cr. hrs.
A study of what mind is and its relation to the body; various concepts related to the mental and to human action. Prereq: Cons. of dept. ch.

PHIL 6460. Philosophy of Freedom. 3 cr. hrs.
A systematic investigation of problems involved in the assertion of human freedom. Prereq: Cons. of dept. ch.

PHIL 6470. Problems in Metaphysics. 3 cr. hrs.
Studies doctrines on the nature of ultimate reality; associated topics such as substance, relation, process or change, causality, universals, particulars, space, time, eternity, freedom, necessity; and the meaning of metaphysics as a philosophical discipline. Prereq: Cons. of dept. ch.

PHIL 6480. Recent Christian Metaphysics. 3 cr. hrs.
A study of recent Christian metaphysical thought through one or more major figures, such as Marechal, Lonergan, Gilson, Tillich, or through thematic problems. Prereq: Cons. of dept. ch.

PHIL 6510. Philosophy of Religion. 3 cr. hrs.
Inquiry into the religious dimensions of human existence and into divine reality. Topics include: religion as a cultural institution, religious experience, the existence and nature of God, the problem of evil, faith and reason, religious language, and the rationality of religious belief. Prereq: Cons. of dept. ch.

PHIL 6530. Philosophy of History. 3 cr. hrs.
Study of both critical and speculative philosophy of history. Problems such as the nature of the historian's inquiry, types of historical understanding, theories of historical explanation, the possibility of pattern and purpose or value in history. Prereq: Cons. of dept. ch.

PHIL 6605. Plato. 3 cr. hrs.
A study of Plato's thought, especially his ethics, epistemology, psychology and metaphysics. Prereq: Cons. of dept. ch.

PHIL 6610. Aristotle. 3 cr. hrs.
A study of Aristotle's thought, especially his metaphysics, epistemology and psychology. Prereq: Cons. of dept. ch.

PHIL 6620. Augustine. 3 cr. hrs.
The early philosophical dialogues and The Confessions, The City of God, and The Trinity, considered in their significance as sources of Christian thought. Prereq: Cons. of dept. ch.

PHIL 6630. Plotinus and Early Christian Neo-Platonists. 3 cr. hrs.
A study of the origin and character of neoplatonic thought, especially its metaphysics, epistemology and psychology, and its appropriation by Christian thinkers. Concentration on writers such as Plotinus, Proclus, Boethius and Pseudo-Dionysius. Prereq: Cons. of dept. ch.
PHIL 6635. Medieval Islamic Thought. 3 cr. hrs.
Islamic philosophical thought of the medieval period. Possible figures covered: al-Kindi, al-Farabi Ibn Sina (Avicenna), al-Ghazali, Ibn Rushd (Averroes) including Greek philosophical and Islamic theological foundations, as well as the influence of Islamic philosophy on Christian and Jewish thought in the Middle Ages. Prereq: Cons. of dept. ch.

PHIL 6640. St. Thomas Aquinas. 3 cr. hrs.
A study of St. Thomas Aquinas' philosophy, especially his metaphysics, epistemology, and psychology. Prereq: Cons. of dept. ch.

PHIL 6650. Descartes. 3 cr. hrs.
A study of some principal works of Descartes. Prereq: Cons. of dept. ch.

PHIL 6652. Post-Cartesian Rationalism. 3 cr. hrs.
A study of major works of the post-Cartesian rationalists: Spinoza and Leibniz. Prereq: Cons. of dept. ch.

PHIL 6654. Locke/Berkeley. 3 cr. hrs.
A study of the major works of Locke and Berkeley, including Locke's An Essay Concerning Human Understanding, and Berkeley's Principles of Human Knowledge and Three Dialogues Between Hylas and Philonous. Prereq: Cons. of dept. ch.

PHIL 6655. Hume. 3 cr. hrs.
A study of some of Hume's major works, including either A Treatise of Human Nature or Enquiry Concerning Human Understanding, Enquiry Concerning the Principles of Morals and/or Dialogues Concerning Natural Religion. Prereq: Cons. of dept. ch.

PHIL 6660. Kant. 3 cr. hrs.
A study of some principal works of Kant including the Critique of Pure Reason. Prereq: Cons. of dept. ch.

PHIL 6662. Hegel. 3 cr. hrs.
Hegel's system as found in the Phenomenology of Spirit or the Logic. Prereq: Cons. of dept. ch.

PHIL 6664. Husserl. 3 cr. hrs.
A textual study of some principal works. Prereq: Cons. of dept. ch.

PHIL 6670. Classical American Philosophy. 3 cr. hrs.
A textual study of the principal works of American philosophers, such as Peirce, James, Dewey. Prereq: Cons. of dept. ch.

PHIL 6680. Early Analytic Philosophy. 3 cr. hrs.
A study of the early development of the Vienna Circle and of the principal works of Moore, Russell and Austin. Prereq: Cons. of dept. ch.

PHIL 6685. Contemporary Analytic Philosophy. 3 cr. hrs.
A study of major post-positivist developments in the analytic tradition including the thought of figures such as Quine and Sellars. Prereq: Cons. of dept. ch.

PHIL 6690. German Phenomenology-Existentialism. 3 cr. hrs.
Reading and discussion of the works of such thinkers as Kierkegaard, Nietzsche, Heidegger, Jaspers and Scheler. Prereq: Cons. of dept. ch.

PHIL 6695. French Phenomenology-Existentialism. 3 cr. hrs.
A study of problems, such as meaning vs. absurdity, theism vs. atheism, and intersubjectivity vs. solipsism, in such thinkers as Sartre, Marcel, Camus and Merleau-Ponty. Prereq: Cons. of dept. ch.

PHIL 6710. Political Philosophy. 3 cr. hrs.
Consideration of the genesis and justification of the state; questions concerning the best form of government; problems especially germane to democracy, such as the nature and justification of equality and liberty, and of the balance of power and the majority rule. Prereq: Cons. of dept. ch.

PHIL 6750. Philosophy of Law. 3 cr. hrs.
A study of the various philosophical approaches to the basic problems and values in law. Prereq: Cons. of dept. ch.

PHIL 6953. Text/Seminar on Ancient Philosophy. 3 cr. hrs.
Either the study of a specific period within Ancient Philosophy, such as Pre-Socratic thought or Roman moral philosophy; or the intensive reading of a major work such as Plato's Sophist or Theaetetus or Aristotle's Metaphysics or Nicomachean Ethics; or the investigation of a theme running through Ancient Philosophy such as problems with the veracity of perception, the ontological status of ideas, or Aristotle and the Peripatetics. Prereq: Cons. of dept. ch.

PHIL 6954. Text/Seminar on Early or High Medieval Philosophy. 3 cr. hrs.
Either the study of individual thinkers, such as St. Anselm, St. Bonaventure, St. Albert the Great; or on specific texts, such as St. Thomas' Treatise On Spiritual Substances; or on problems, such as the nature of man according to St. Bonaventure or doctrines on Divine Illumination in the 13th century. Prereq: Cons. of dept. ch.

PHIL 6955. Text/Seminar on Later Medieval or Renaissance Philosophy. 3 cr. hrs.
Either the study of individual thinkers, such as William of Ockham, Duns Scotus, Nicholas of Cusa, Giordano Bruno, Niccolo Machiavelli; or on themes running through these periods, such as the nature of man, or theories of knowledge, or the Platonism of the 15th and 16th centuries. Prereq: Cons. of dept. ch.
PHIL 6957. Text/Seminar on Nineteenth-Century Philosophy. 3 cr. hrs.
Either the study of major philosophers, such as Marx, Fichte, or Peirce; or on major texts, such as Hegel's Logic, or Kierkegaard's Concluding Unscientific Postscript; or on philosophical problems, such as the individual and the social order, or pragmatic views of knowledge and truth. Prereq: Cons. of dept. ch.

PHIL 6958. Text/Seminar on Twentieth-Century Philosophy. 3 cr. hrs.
Either the study of philosophical movements, such as existentialism, phenomenology, analysis, or pragmatism; or of specific philosophers, such as Sartre or Russell; or of major philosophical works, such as Philosophical Investigations, or Being and Time. Prereq: Cons. of dept. ch.

PHIL 6959. Seminar in Philosophy. 1-3 cr. hrs.
Subjects and credits according to arrangement. Prereq: Cons. of dept. ch.

PHIL 6960. Seminar in Applied/Professional Philosophy. 3 cr. hrs.
Study of ethical issues which cut across professions and disciplines. Consideration given to issues such as human rights, allocation of social resources, confidentiality, informed ethics, truth telling, etc. Prereq: PHIL 6310 and cons. of dept. ch.

PHIL 6965. Practicum in Philosophy. 3-6 cr. hrs.
Internship designed to develop a student's ability to use philosophical thinking and concepts in dealing with problems which arise in the context of a specific job, vocation, or institutional setting. Students arrange placement on an individual basis. S/U grade assessment. Prereq: Cons. of dept. ch.

PHIL 6970. Seminar on Teaching Philosophy. 3 cr. hrs.
An introduction to the theory and practice of teaching philosophy. Prereq: Graduate stndg.

PHIL 6995. Independent Study in Philosophy. 1-3 cr. hrs.
Prereq: Cons. of dept. ch.

PHIL 6998. Professional Project in Philosophy. 1-12 cr. hrs.

PHIL 6999. Master’s Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

PHIL 8995. Independent Study in Philosophy. 1-3 cr. hrs.
A course whose mode of instruction offers a student the opportunity to study or do in-depth research on a topic or subject matter not usually offered in the established curriculum, with a current Marquette faculty of his/her choice and independent of the classroom setting. Prereq: Cons. of dept. ch.; cons. of graduate prog. dir.

PHIL 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

PHIL 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9979. Field Placement Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9984. Master’s Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9985. Master’s Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9986. Master’s Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
PHIL 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PHIL 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Political Science (POSC)

Chairperson: Paul Nolette, Ph.D.
Department of Political Science Graduate Program Overview website (https://www.marquette.edu/political-science/graduate-program-overview.php)

Degree Offered

Master of Arts, students are admitted under Plan B (non-thesis option) but may request Plan A (thesis option)

Program Description

The Department of Political Science at Marquette University offers a master's program in political science (https://www.marquette.edu/grad/programs-political-science.php), aimed at preparing students for political science doctoral study and careers in related fields. In addition, the department offers several dual degrees and accelerated degrees. The Political Science Department offers: an accelerated 5-year bachelor's and master's degree program in political science; a dual 4-year master of arts-juris doctor (M.A.-J.D.) program in political science in conjunction with the Law School; and dual degree programs in conjunction with the communication and the business administration graduate programs. Furthermore, Law School graduates can pursue an accelerated master of arts degree through awards of transfer credit for work completed as part of the juris doctor degree.

Prerequisites for Admission

An applicant to the master's program in political science should have graduated with, or be about to graduate with, a bachelor's degree from an accredited institution in an undergraduate program sufficient in quality and scope to prepare the individual for specialized work in political science.

Application Deadline

No official deadline exists for the political science master's program. However, applications submitted after the Graduate School's official financial aid deadlines will be considered only as space permits, even if the applicant is not requesting financial aid. The deadlines for financial aid consideration are Feb. 15 for the following fall term and Nov. 15 for the following spring term.

Application Requirements

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. Two letters of recommendation. A third recommendation letter is encouraged.
4. GRE scores (General Test only). Not required for accelerated B.A.-M.A. degree program applicants; M.A.-J.D. applicants may substitute LSAT scores for GRE scores; M.A.-M.B.A. applicants may substitute GMAT scores for GRE scores.
5. A statement of purpose.
6. (For international applicants only) an overall minimum TOEFL score of 100 or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

Dual Programs of Study

M.A.-J.D. Degree

The Department of Political Science, in conjunction with the Law School, offers a program of dual study leading to a master of arts degree in political science and a juris doctor degree.

Students seeking admission to the dual program must apply to both the Graduate School and the Law School and must meet the admission requirements for each, but their application to the Graduate School may include LSAT scores in lieu of GRE scores. Students start this dual program as a law student. Upon completion of the law program, students will be officially admitted to the political science program for completion of the remainder of the dual program.

Dual program students complete 81 credit hours in the Law School, 21 credit hours in political science, and 9 credit hours in dual program courses. In addition, applicants for the political science master of arts program who already hold a J.D. degree may request that a maximum of 9 credits from their previous law studies be counted toward the fulfillment of their master of arts degree requirements.

In general, dual program students will pay tuition at the full-time (flat tuition) Law School rate while a full-time law student, regardless of whether or not they are taking additional graduate courses. Upon receiving the juris doctor degree, dual program students will pay Graduate School tuition at the per credit rate for graduate courses. Part-time law students will pay the per credit Law School rate for all courses.
Additional details about the M.A.-J.D. program are available from the Political Science Department office or from the Law School Admissions office.

**M.A.-M.B.A. Degree**

The Department of Political Science, in conjunction with the Graduate School of Management, offers a program of dual study leading to a master of arts degree in political science and a master of business administration degree. The program is designed for students whose interests overlap business and politics. Dual degree students are able to complete both degree programs in less time than if both degrees were pursued separately.

Students seeking admission into the dual degree program must submit separate applications for admission to both the Graduate School and the Graduate School of Management, and must meet the admission requirements of each program. However, applicants may submit GMAT scores in lieu of GRE scores. Acceptance into one program does not guarantee acceptance into the other. If a student is accepted into one program and not the other, the student can still choose to accept the admission offer from the first program but would not be considered a dual degree student. Because students are officially admitted into only one Marquette University graduate program at a time, applicants must indicate which program they intend to pursue and complete first, although once accepted for admission to both programs, students may take courses from both schools. Upon completion of the first program, the student will be officially admitted to the second program for completion of the remainder of the dual program.

Dual degree students count 9 credits of course work in each program toward the required course work credits of the other program. Thus, 9 of the 40 credits required for the master of business administration degree beyond foundations, if required, will come from POSC courses, and 9 of the 30 credits required for the master of arts degree in political science will come from GSM courses.

**M.A.-M.A. Degree**

The Department of Political Science, in conjunction with the J. William and Mary Diederich College of Communication, offers a program of dual study leading to a master of arts degree in political science and a master of arts degree in communication. Dual degree students are able to complete both degree programs in less time than if both degrees were pursued separately.

Students seeking admission into the dual degree program must submit separate applications for admission to both programs to the Graduate School, and must meet the admission requirements of each program. Acceptance into one program does not guarantee acceptance into the other. If a student is accepted into one program and not the other, the student can still choose to accept the admission offer from the first program but would not be considered a dual degree student. Because students are officially admitted into only one Marquette University graduate program at a time, applicants must indicate which program they intend to pursue and complete first, although once accepted for admission to both programs, students may take courses from both departments. Upon completion of the first program, the student will be officially admitted to the second program for completion of the remainder of the dual program.

Dual degree students count 9 credits of course work in each program toward the required course work credits of the other program. Thus, 9 of the 36 credits required for the master of arts degree in communication will come from POSC courses, and 9 of the 30 credits required for the master of arts degree in political science will come from COMM courses.

**Political Science Master's Requirements**

A student in political science is admitted to a non-thesis program (Plan B), which requires 30 credit hours of course and seminar work. The Plan B student must pass written and oral comprehensive examinations to complete the program.

Students are presumed to be in Plan B unless a formal request to transfer to a thesis program (Plan A) is approved by the department director of graduate studies and the Graduate School. Plan A requires 24 credit hours of course and seminar work and six credit hours of thesis work. The Plan A student must pass written and oral comprehensive examinations and submit an approved thesis to complete the program.

**Program Requirements**

Students in the political science program must complete:

<table>
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<tr>
<th>Core Seminars</th>
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<tr>
<td>POSC 6101</td>
<td>Contemporary Political Research</td>
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<tr>
<td>POSC 6201</td>
<td>American Politics</td>
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<tr>
<td>POSC 6401</td>
<td>Comparative Politics</td>
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<td>POSC 6601</td>
<td>International Politics</td>
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<td>POSC 6801</td>
<td>Political Philosophy</td>
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<td>Electives</td>
<td>12</td>
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<tr>
<td>Thesis credits (Plan A) or additional course work (Plan B)</td>
<td>6</td>
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<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>30</strong></td>
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At least 18 credits of the 30 credit hour requirement for Plan B students (15 credits of the 24 credit hour requirement for Plan A students) must be fulfilled in strictly graduate level course work (courses numbered 6000 or above). Up to 12 credit hours of 5000-level courses may be approved for graduate credit for Plan B students (9 credit hours for Plan A students).

**Elective Course Options**

The remaining 18 credit hours of course work (12 credits for Plan A) are selected from graduate-level POSC courses or a combination of graduate-level POSC courses and graduate-level cognate courses. With the approval of the department director of graduate studies, a student may receive up to 9 credit hours toward the master of arts degree in graduate-level cognate courses taken outside the Political Science Department. Examples of cognate courses include, but are not limited to, graduate courses in Communication (COMM), Communication Studies (CMST), Economics (ECON), History (HIST), Non-profit Sector (NPSE), Philosophy (PHIL) and Public Service (PUBS).

**Research Papers**

Students must complete at least two conference-quality research papers. These papers must deal with significant questions and demonstrate rigorous analytical and, as appropriate, methodological skills. The instructors in whose courses the papers are written must certify that the student has fulfilled this requirement. Specific details and certification forms are available from the department office.

**Comprehensive Examinations**

A candidate for the master of arts degree in political science must pass written and oral comprehensive examinations covering two of the following fields: political philosophy, American politics, comparative politics, international politics. Students are encouraged to work with their adviser to select appropriate elective courses based on which of the fields they plan to select for the comprehensive exams.

The written examination is based on comprehensive reading lists for each subfield, the student's course work and sample questions provided in advance. The oral examination supplements the written examination and is based on the comprehensive reading lists and the student's course work. The examining committee is normally composed of three faculty members chosen by the department director of graduate studies in consultation with the student and their adviser. Details on the examinations, the reading lists and the sample questions are available from the department office.

**Accelerated Bachelor’s-Master’s Degree Programs**

The political science master's program has two accelerated (bachelor's-master's) degree options.

**Option 1:** This option is for undergraduate students majoring in political science or international affairs. This option allows Marquette University students to earn both a bachelor of arts degree with a major in political science or in international affairs and a master of arts degree in political science in five years.

Students complete 9-12 hours of graduate credit in political science (POSC) courses during their undergraduate senior year. These graduate courses count for both the undergraduate and graduate degrees. Should a student be denied admission to the master's program, the courses are counted toward the undergraduate degree. Upon completion of the first term as a master's candidate, the student must petition the Graduate School to transfer the courses taken as an undergraduate to the master's degree. All remaining master's degree requirements may be completed during the subsequent summer, fall and spring terms.

Candidates for admission should have undergraduate junior status, have completed at least three upper-division political science (POSC) courses and should have a political science (POSC) course GPA of at least 3.500. Candidates for admission should submit transcripts and three letters of recommendation, but need not submit GRE scores. Candidates for admission to this program should notify the department director of graduate studies of their intentions.

**Option 2:** This option is for undergraduate students who are not majoring in political science or international affairs. This option allows Marquette University students to earn both a bachelor of arts degree (with any undergraduate major) and a master of arts degree in political science in five years.

Students complete 9-12 hours of graduate credit in political science (POSC) courses during their senior undergraduate year. These graduate courses count for both the undergraduate and graduate degrees. Should a student be denied admission to the master's program, the courses are counted toward the undergraduate degree. Upon completion of the first term as a master's candidate, the student must petition the Graduate School to transfer the courses taken as an undergraduate to the master's degree. All remaining master's degree requirements may be completed during the subsequent summer, fall and spring terms.

Candidates for admission should have undergraduate junior status, have completed two 2000-level and two upper-division political science (POSC) courses by the end of the first term of their junior year, and should have a political science (POSC) course GPA of at least 3.500. Candidates for admission should submit transcripts and three letters of recommendation, but need not submit GRE scores. At least one recommendation letter must be from a faculty member of the Department of Political Science. Candidates for admission to this program should notify the department director of graduate studies of their intentions.
Courses

POSC 5191. The Logic of Social Inquiry: The Kennedy Assassination. 3 cr. hrs.
The question of who killed President John F. Kennedy, and whether there was a conspiracy. The physical evidence; eyewitness testimony; Lee Harvey Oswald, Jack Ruby, and suspected conspirators. The logic of social inquiry, and how we can approach 'conspiracy' as a hypothesis to be tested.

POSC 5193. Environmental Politics and Policy. 3 cr. hrs.
Tackles the key political and policy debates surrounding the many dimensions of environmental issues, to include global human security to local pollution controls. Focuses on a core set of debates that frame intellectual and practical approaches to solving environmental challenges.

POSC 5195. Politics of the Internet. 3 cr. hrs.
The origins and growth of the Internet. Legal and regulatory dilemmas posed by the Internet. The impact of the Internet on politics, society and economics.

POSC 5201. The United States Congress. 3 cr. hrs.
Membership, legislative process, and internal distribution of power in the U.S. Congress. Congressional relationships with the presidency, executive bureaucracy, interest groups, and public.

POSC 5211. The American Presidency. 3 cr. hrs.
The evolution and contemporary status of the American presidency. Presidential elections, policy-making, advisory systems, and relationships with Congress, the bureaucracy, and the courts. Problems and techniques of decision-making.

POSC 5212. American Political Parties. 3 cr. hrs.
Examines the nature and development of American political parties. Traces continuity and change in the American party system beginning in the early Republic, assessing the rise and fall of the Whigs, the dynamic between machine politics and progressive reform, and the shifts in party ideas and policy stances that inform contemporary political debates. The question of ideological change in American political parties is further explored by contemporary work on factions, polarization, and culture war. Assesses changes to the parties as organizations in the wake of reforms to the candidate selection process from an institutional perspective. Explores the question of how American political parties compare to their counterparts in other advanced industrial democracies.

POSC 5213. Elections, Parties, and Political Opinion. 3 cr. hrs.
The development, functions, and membership of political parties in the United States. The opinions Americans hold on various issues, and how these opinions are influenced by institutions, including the family, schools, and the media. Why Americans vote as they do, including the effect of political parties and issues. Voter apathy and alienation and their sources.

POSC 5216. American Public Policy. 3 cr. hrs.
U.S. domestic policy with special attention to the politics of national policy in the areas of the economy, social welfare, and the environment. The stages of the policy process: agenda-building, formation, budgeting, implementation, and evaluation.

POSC 5221. Interest Group Politics. 3 cr. hrs.
How groups are organized around particular economic interests and political preferences in order to influence policy-making institutions. The internal incentive structure of political organizations, including business, professional, trade union, and 'public interest' groups. Functions of, and biases inherent in, the group process.

POSC 5231. Political Organizations. 3 cr. hrs.
Political parties, social movements, interest groups, and civic associations. How citizens organize themselves to participate in the political process. How democratic institutions resolve the tension between individual citizenship and collective action. Explores theories of mobilization, questions of influence, and explanations of success.

POSC 5241. American Constitutional Law and Development. 3 cr. hrs.
An examination of the historical development of American constitutional law and politics, including the areas of judicial review, separation of powers, federalism, the powers of Congress and the presidency, and the rise and decline of due process property rights. Explores the judiciary's role in constructing constitutional law and how this role has been contested over time. Considers how political institutions and forces, in addition to the judiciary, have shaped American constitutionalism.

POSC 5251. The Politics of Civil Rights and Liberties. 3 cr. hrs.
An examination of civil rights and liberties policies in the United States, with an emphasis on the development of these policies over the course of American political history. Explores how the Supreme Court’s contribution to this development is connected with the broader historical and political context in which it sits. The Court does not play an exclusive role in this process. Expanding, contracting, or otherwise altering the meaning of a right or a liberty involves a range of political actors in a variety of venues. Coverage includes free speech, religious freedom, political participation, privacy, criminal procedures and the rights of minority groups and women.

POSC 5261. Urban Public Policy. 3 cr. hrs.
Conditions in American cities and the extent to which they can be improved by political activity. Race relations, ethnicity and class and their effects on housing, education and income.
POS 5291. State and Local Politics. 3 cr. hrs.
Examines sub-national governments in the United States, including a comparative study of political institutions, political cultures and public policies across state and local governments. Draws upon examples from Wisconsin and Milwaukee to better understand the role of state and local governments in the American federal system.

POS 5321. Business and Politics. 3 cr. hrs.

POS 5331. Politics and Regulation. 3 cr. hrs.
Economic and social regulation in America. Why we have regulations. Who is regulated. Who does the regulating. What the consequences of regulation are. Primary focus on business regulation and related topics.

POS 5341. Politics of American Capitalism. 3 cr. hrs.
Political economy of U.S. history. Individuals, firms, and business associations and their role in politics. Economic development and conflict as sources of political change.

POS 5343. The Logic of Social Inquiry: The Kennedy Assassination. 3 cr. hrs.
The question of who killed President John F. Kennedy, and whether there was a conspiracy. The physical evidence; eyewitness testimony; Lee Harvey Oswald, Jack Ruby, and suspected conspirators. The logic of social inquiry, and how we can approach 'conspiracy' as an hypothesis to be tested.

POS 5346. Politics of the American Civil War. 3 cr. hrs.
Examines the American Civil War (1861-1865) as a crisis provoked by unresolved constitutional issues concerning nullification and secession, tariffs and the status of slavery. Readings include primary source material, select documents and speeches composed by leading statesmen from the time of the founding until 1866.

POS 5351. Environmental Politics and Policy. 3 cr. hrs.
Tackles the key political and policy debates surrounding the many dimensions of environmental issues, to include global human security to local pollution controls. Focuses on a core set of debates that frame intellectual and practical approaches to solving environmental challenges.

POS 5356. Politics of the Internet. 3 cr. hrs.
The origins and growth of the Internet. Legal and regulatory dilemmas posed by the Internet. The impact of the Internet on politics, society and economics.

POS 5361. Politics of Race, Ethnicity, and Gender. 3 cr. hrs.
The role of African-Americans, Asian-Americans, Hispanics, white ethnics, American Indians, and women in shaping American politics through elections, political parties, and public office. The nature and impact of political organizations representing these groups.

POS 5366. Religion and Politics. 3 cr. hrs.
Religion and politics in contemporary America. The historic patterns and current interactions of religious movements, denominations, and individuals involved in American politics. Specific attention given to the rationales used for religious involvement in politics, the types of political behavior employed, and the consequences of that behavior.

POS 5371. Media and Politics in the U.S. 3 cr. hrs.
Explores role and power of media in American political systems; history and development of national press, including court interpretations of freedom of the press; quality and impact of political reporting, with emphasis on election coverage; and media's relationships with other political actors.

POS 5376. American National Security Policy. 3 cr. hrs.
Defense policy processes in the United States; issues in defense decision-making, including the roles of the public, interest groups, Congress, the President, and executive agencies, with emphasis on the defense establishment; U.S. strategic doctrines since World War II; budgeting; civil-military relations.

Examines the American health care system, health care policies, and underlying politics. Provides an overview of the organization and financing of health care in the United States. Examines the impact of the political system, political parties and interest groups, and values on the health care system and health policies at national and state levels. Covers health care reform politics, including the Democrats' 2010 Affordable Care Act and Republican reform alternatives. Also focuses on the social determinants of health and policies for vulnerable populations.

POS 5406. Public Policy in Industrial Democracies. 3 cr. hrs.
Politics of public policies in democratic political systems, with special attention to North America, Western Europe, and Japan. Alternative theoretical perspectives on the problem of social choice in democracies. Problems and policies in the areas of the economy, education, health, welfare, and the environment.

POS 5411. Politics, Economics, and Democracy. 3 cr. hrs.
The relationship between capitalism and democracy. The impact of economic factors on politics. The political consequences of the organization and power of private business. The impact of democratic politics and political institutions on economic actors and performance in capitalist democracies.

POS 5416. Politics of Inequality. 3 cr. hrs.
Examines the growth and cross-national differences in economic inequalities in the contemporary era, the impact of rising inequality on democracy and the socioeconomic and political causes of rising inequality. Special attention to how political forces, such as public opinion, electoral competition and the power of organized interests, shape the distribution of income and wealth and the equality of economic opportunity.
POSC 5421. Democracy, Authoritarianism, and Totalitarianism. 3 cr. hrs.
Three 'ideal types' of political systems, and their manifestations in countries at different points in time. Topics include: power, legitimacy, ruling elites, institution, and economics. Examination of political system change through coup, revolution, and peaceful transition.

POSC 5431. Modern Revolutions. 3 cr. hrs.
Types and causes of revolutions. Modern case studies. The American, French, Russian, German and selected 'Third World' revolutions, with attention to ideas, institutions, socio-economic conditions, and the nature of actual changes.

POSC 5441. Designing Liberal Democracy. 3 cr. hrs.
Exploring liberal democracy in theory practice, especially as concerns emerging democracies in the developing world. Includes consideration of the impact of economic development, ethnicity, language, legacies of colonialism and/or indigenous political organization, internal democracy, corruption, strategic location and institutional design.

POSC 5451. Comparative Judicial Politics. 3 cr. hrs.
Provides a detailed introduction to the empirical and normative debates surrounding judicial power including origins of judicial review, courts as strategic actors and the development of stronger courts over time in American and comparative context. Focuses on the development of rule of law, and in particular, how the court as a governing institution interacts with legislative and executive powers. POSC 4241 or equiv. recommended.

POSC 5461. Comparative Health Politics and Policy. 3 cr. hrs.
Explores through comparative analysis the ways in which different nations address the goals of equitable access, affordability and quality in health care. Considers the similarities and differences in health policy challenges facing rich and developing nations. Employs comparative analysis of different models of health care provisions and financing, and examines the underlying politics of health care systems and policies in different countries.

POSC 5481. Comparative Urban Political Economy. 3 cr. hrs.
Explores, from an interdisciplinary perspective, issues facing cities in the developing world. Provides overall context and concepts useful to understand the economic, political, and social conditions in the contemporary Global South. Applies these tools to understand specific urban challenges, such as housing, segregation, informality and public goods provision.

POSC 5501. European Politics. 3 cr. hrs.
Nationalism and European identity; evolution of executive and legislative institutions; political parties; ongoing changes in the welfare state and state socialism; transformation of class structure; the challenge of post-industrial society. Includes both Eastern and Western Europe.

POSC 5511. Russian and Post-Soviet Politics. 3 cr. hrs.
Developments in Russia and the other countries which emerge from the collapse of the Soviet Union. Brief coverage of tsarist and Soviet politics, with a particular emphasis on reasons for the USSR's collapse and Soviet legacies, followed by an overview of domestic and international politics in the region.

POSC 5521. Chinese Politics. 3 cr. hrs.
Origins of the Chinese Revolution, political change and conflict in post-1949 China, and the contemporary political system and political developments.

POSC 5541. Latin American Politics. 3 cr. hrs.
Government and politics in major Latin American countries. The politics of social change and development, seizures of power and rule by the military, and the role of external factors.

POSC 5551. Politics of the Indian Subcontinent. 3 cr. hrs.
The British in India; the Indian nationalist movement and the Hindu-Muslim struggle; political systems in India and Pakistan; the creation of Bangladesh; linguistic, economic, and social issues in South Asia.

POSC 5561. Politics of the Developing World. 3 cr. hrs.
Politics of agricultural development, industrialization, military intervention, and social and cultural conflict in Third World countries.

POSC 5601. International Law. 3 cr. hrs.
Introduces students to the theoretical frameworks, empirical cases, and cutting-edge debates in the field of international law. Focuses on different theoretical perspectives for understanding international law. Examines the general principles of international law, including actors of international law, the creation and interpretation of international law, and the relationship between international law and domestic law. Explores several specialized areas of international law, such as human rights, environment, international criminal justice, trade, and the use of force.

POSC 5611. International Organizations. 3 cr. hrs.
Introduces students to the theoretical frameworks, empirical cases, and cutting-edge debates in the field of international organizations. Focuses on different theoretical perspectives for understanding international organizations. Examines the effects of international organizations in world politics, such as the role of international organizations in fostering interstate cooperation, the power of international organizations in shaping state interests and identities, the pathologies of international organizations as global bureaucracies, and the interactions between international organizations and other non-state actors like nongovernmental organizations.

POSC 5621. Politics of the World Economy. 3 cr. hrs.
Political and economic dynamics of the world economy; historical and theoretical roots; international trade and monetary relations and the impact of hegemony, interdependence, regimes, and domestic politics; trade, debt, multinational corporations, and the dynamics of dependency and development; communism, capitalism, and change.

POSC 5631. World Conflict and Security. 3 cr. hrs.
Classical and contemporary theories of war and peace; just and unjust wars; principles of strategic analysis, arms control, and security policy-making; the proliferation of nuclear, chemical, and biological weapons. The international trade in arms; nationalism, ethnic conflict, and wars of secession.
POSC 5635. Cyber Security. 3 cr. hrs.
Studies the impact of cyber security on international relations. Considers the history of and potential for using computer networks to conduct espionage, attack digital and physical infrastructure, undermine information integrity and commit other crimes. Considers how cyber threats redistribute power in the international system and change the rules by which the international system operates. Considers policy issues such as balancing security concerns with rights such as freedom of speech and privacy.

POSC 5636. Terrorism. 3 cr. hrs.
Why do militant groups employ terrorist methods? What forces or pressures drive militant leaders to employ such controversial forms of violence in pursuit of their aims? Study what terrorists do, and why they do it, and formulate answers to these questions. Develop and apply alternative theories or lenses through which militant groups can be analyzed. Examine case studies of diverse domestic and foreign militant groups.

POSC 5641. Politics of the Illicit Global Economy. 3 cr. hrs.
Political and economic dynamics of the illicit dimension of the global economy; historical and theoretical roots; state efforts to control illicit flows of goods and services including drug trafficking, arms smuggling, illegal migration, traffic in women and children, money laundering; exploration of transnational organized crime as a challenge to state power.

POSC 5643. Human Trafficking. 3 cr. hrs.
Patterns of human trafficking, and local, national, international and global responses. Traces the historical, political, economic and social drivers of human trafficking and anti-trafficking efforts. Explores the transatlantic slave trade, white slave trade, comfort women and modern-day challenges of sex, labor and organ trafficking.

POSC 5646. Politics of Migration. 3 cr. hrs.
Juxtaposes transnational life-worlds of migrants against a state-centered perspective of international boundaries and citizenship. Examines the lived experience of migrant journeys within their larger political context and explores what these narratives of mobility can teach us about the politics of migration around the globe. Topics include explanations of the resilience of unauthorized migration; impact of securitization of migration on the lives of migrants and citizens; and decisions on who belongs on which side of the border, how and why.

POSC 5651. The Politics of Human Rights. 3 cr. hrs.
Introduces students to the theoretical frameworks, empirical cases, policy instruments and cutting-edge debates in the field of human rights. Examines different theoretical perspectives for understanding human rights, the philosophical foundations and historical origins of human rights, various mechanisms and actors for promoting and protecting human rights, the trajectory and effectiveness of humanitarian intervention and various forms of transitional justice.

POSC 5661. The Political Economy of Development. 3 cr. hrs.
Introduces interaction between politics and economics in developing countries by examining political and economic development (and underdevelopment) through the lenses of the principal theoretical debates and substantive issues. Areas of inquiry include the general theories that underpin the study of the processes of economic and political reform, the roles of international and domestic institutions, and the influence of private interests including business, labor and civil society organizations. Substantive issues include poverty, conflict, human rights, foreign aid, investment and the environment.

POSC 5701. United States Foreign Policy. 3 cr. hrs.
Objectives of American foreign policy. Problems facing the United States in its relations with other countries. Trade, aid, propaganda and alliances as instruments of foreign policy.

POSC 5711. International Politics of Europe. 3 cr. hrs.
Evolution of the post-war settlement in Europe. Western European and Eastern European integration, relations between Western and Eastern Europe, Europe and the superpowers, French-German and intra-German relations, Europe and the Third World, European security issues.

POSC 5721. International Politics of the Middle East. 3 cr. hrs.
Historical and religious background of Middle East politics; comparative ideologies and political systems in the Middle East; Arab-Israeli relations; Persian Gulf politics; politics in the Maghreb; great power interests in the region.

POSC 5731. International Politics of Asia. 3 cr. hrs.
Principal patterns and problems of international politics in Asia, including international political economy, development and security issues, and the impact of global trends. Regional focus varies.

POSC 5741. United States-Latin American Relations. 3 cr. hrs.
United States response to reform and revolutionary movements and governments in Latin America. The politics of trade, foreign investment, foreign assistance, and human rights.

POSC 5801. Citizens, Beasts, or Gods?. 3 cr. hrs.
Evaluates the comparative congeniality to mankind of pre-political 'states of nature,' political citizenship, and the life of philosophy; selections from the works of Rousseau, Nietzsche, Chesterton and Aristotle are read.

POSC 5811. The Best Constitution. 3 cr. hrs.
Examines the relationship between constitutional design and human flourishing; selections from the works of Plato and others are read.
POSC 5812. Ethics and Politics. 3 cr. hrs.
Examines whether the good life we seek by forming and abiding in political communities is to be found chiefly in enjoying pleasure, in winning honor, or in contemplating truth. Is moral virtue a necessary condition of living well, or can standards of justice sometimes be compromised for citizens to partake more fully in the good life? Just what is virtue and how might it be fostered? Readings include Aristotle’s Nicomachean Ethics, as well as Machiavelli’s Prince and Plato’s Meno.

POSC 5813. Nietzsche and Christianity. 3 cr. hrs.
Examines Friedrich Nietzsche’s penetrating analysis of the contemporary crisis of Western Civilization, as well as his more dubious first principles of the “will to Power” and the “eternal return,” in juxtaposition with G.K. Chesterton’s and Josef Pieper’s celebration of Christian orthodoxy. Readings include Nietzsche’s Beyond Good and Evil, Chesterton’s Orthodoxy and Pieper’s In Tune with the World.

POSC 5821. Democracy and Its Problems. 3 cr. hrs.
Diagnoses the instability of popular governments in antiquity and considers the remedy provided by the American constitutional republic; selections from the works of Thucydides, Publius, Tocqueville and others.

POSC 5841. Enlightenment Political Thought. 3 cr. hrs.
The Enlightenment’s contribution to modern doctrines of individual rights, representative government, popular sovereignty, free enterprise, religious toleration, and freedom of speech. Authors such as Locke, Voltaire, Hume, Publius, Rousseau and Burke.

POSC 5851. Karl Marx. 3 cr. hrs.
Primary works on freedom and alienation, history, capitalism, revolution, and socialism that have inspired Marxist movements.

POSC 5861. The Political Philosophy of Capitalism. 3 cr. hrs.
Is capitalist society just or unjust? Does capitalism promote or inhibit the realization of freedom? Does capitalism promote or inhibit the pursuit of human excellence? Authors such as Rousseau, Adam Smith, Marx, Weber.

POSC 5871. Politics and Literature. 3 cr. hrs.
Study of the central questions of political philosophy through the lens of literature, with special focus on how literature approaches the questions of the best regime and the best type of human life.

POSC 5881. Postmodern Politics. 3 cr. hrs.
Nietzsche and his successors on the insufficiency of modern ethics and modern politics since the Enlightenment. Focuses on the postmodern critique of modernity’s contributions to consumerism, globalization and technology.

POSC 5931. Topics in Political Science. 2-3 cr. hrs.
Lectures and discussion in a broad area which, because of its topicality, is not the subject of a regular course. May be taken a maximum of three times.

POSC 6101. Contemporary Political Research. 3 cr. hrs.
Approaches to the scientific study of politics; data-collection techniques; case studies, the comparative method, statistical analysis. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6201. American Politics. 3 cr. hrs.
The development of the field of American politics. Currently used concepts and approaches. Extensive reading, short papers, and discussion. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6211. Congress and the Presidency. 3 cr. hrs.
Examination of major literature, theories and concepts used to understand the relationship between the Congress and the presidency. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6221. Interest Groups. 3 cr. hrs.
How various kinds of organizations attempt to exercise political influence, including the use of incentives to attract members, lobbying, attempts to influence public opinion, involvement in electoral politics, and litigation. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6231. Elections and Voters. 3 cr. hrs.
Why voters vote the way they do, including policy preferences, partisanship, and retrospective assessments. The dynamics of elections including the role of media, other elites, money, and interest groups. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6281. Urban Public Policy. 3 cr. hrs.
Introduces the institutions and politics that shape urban public policy. Explores who is involved and influential in urban policy, the power relations in metropolitan America, and how governing coalitions shape and create social change within cities. Examines urban public policy challenges, including racial and income inequalities, housing, education, transportation, law enforcement, economic development and environmental justice.

POSC 6361. Women and Public Policy. 3 cr. hrs.
The development of public policies to advance the status of women throughout U.S. history, with an emphasis on 1961-date. The role of women’s groups and social movements. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6401. Comparative Politics. 3 cr. hrs.
The development of the field of comparative politics. Currently used concepts and approaches. Extensive reading, short papers, and discussion. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.
POSC 6411. Comparative Political Economy of Advanced Industrial Societies. 3 cr. hrs.
The relationships between capitalism and democracy. The impact of economics on the development and operation of democratic institutions, political behavior, and public policy. The impact of politics on economic development, performance and policy. The political economy of the welfare state. The transition to post industrial society. Globalization and the democratic nation state. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6421. Political Economy of East Asia. 3 cr. hrs.
Considers topics in the Political Economy of East Asia such as the rise of Japan and the Four Tigers, the Japanese economy in the 1990s, the East Asian Financial Crisis, the reform of the Chinese economy, economic relations among the East Asian Countries, and the relationship between East Asian economies and the world economy. These topics are considered in light of various theories of political economy, and theories of political economy are evaluated in light of developments in East Asia. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6441. Comparative Nationalism. 3 cr. hrs.
Definitions of nation and nationalism; causes of nationalism; nationalism and democracy; modern nationalism in Europe, Asia and Africa. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6446. Comparative Democratization. 3 cr. hrs.
Definitions of democracy and democratization; causes of regime transition and consolidation; market economics and democracy. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6461. Politics of Development. 3 cr. hrs.
The interplay between economic growth and the development of political institutions and practices, looking at both the historical experiences of advanced industrial societies and those of developing countries currently attempting to expand the capabilities of both their economies and their political institutions. Emphasis on the political factors and conditions on which economic development depends, and on how such growth and expansion in turn affect the political order. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6501. European Politics. 3 cr. hrs.
The evolution of the European nation-state system. The origins, evolution, and transformation of electoral and party systems, modes of interest representation, and national political institutions. The ascent and crisis of the Keynesian welfare state. Variations in national models of capitalism and their impacts on politics. The evolution and contemporary politics of European integration. Globalization and European political economies. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6521. Chinese Politics. 3 cr. hrs.
China's problems and prospects. Economic and political reforms. International relations. An overview and history of relevant literature. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6601. International Politics. 3 cr. hrs.
The development of the field of international politics. Currently used concepts and approaches. Extensive reading, short papers, and discussion. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6621. International Political Economy. 3 cr. hrs.
The development of the study of international political economy. Currently used concepts and approaches. Extensive reading, short papers, discussion, and a final research paper.

POSC 6631. International Security. 3 cr. hrs.
Covers the theories, concepts, and issues underlying conflict and security in the contemporary world. Includes classical and modern perspectives on war and peace, the sources and causes of civil wars and regional conflict, and the prospects for arms control and world peace-keeping operations. Students will be expected to write a research paper on a selected topic concerning contemporary international security. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6641. Globalism and Crime. 3 cr. hrs.
Theories of globalization, state sovereignty, and transnational organized crime; politics of gray and black markets; spatial dimensions of transshipment, global cities; organized crime and state power; intersection of public and private authority in managing transborder flows; drug trafficking, money laundering, and migrant smuggling and trafficking are among the subjects explored. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6642. Nations, States and Nationalism. 3 cr. hrs.
Explores the origins and nature of nations, states, nationalism and violent secessionist movements. Addresses differing concepts of the ethnic and civic nations, the rationale for nation-states as against multiethnic states, and the sources of violent nationalisms. The core of this research seminar addresses the conflicting principles of the right of national self-determination as demanded by various ethnic groups, as against the territorial integrity and sovereignty of states as invoked by national governments. Requires a research paper on a selected topic that relates to the above issues. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6651. International Human Rights. 3 cr. hrs.
The development of international human rights; measures to promote and protect human rights at the global and regional levels. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6701. United States Foreign Policy. 3 cr. hrs.
Policies of the United States toward other nations; policy formation. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.
POSC 6731. International Politics of Asia. 3 cr. hrs.
Security issues among Asian states. The political economy of Asia. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6801. Political Philosophy. 3 cr. hrs.
Explores the differentiation of justice and power with special reference to the authority of a higher law or principle of right; selections from the works of Thucydides, Plato, Aristotle, Machiavelli, and others. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6931. Topics in Political Science. 1-3 cr. hrs.
Lectures and discussion in a broad area which, because of its topicality, is not the subject of a regular course.

POSC 6954. Research Seminar in American Politics. 3 cr. hrs.
Research in a broad area of American politics. Potential topics include, but are not limited to: Metropolitan Politics, The American Political Economy in Comparative Perspective, Problems in Civil Liberties. May be taken more than once. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6956. Research Seminar in Comparative Politics. 3 cr. hrs.
Research in comparative politics. Focuses on traditional comparative politics or contemporary problems. May be taken more than once. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6958. Research Seminar in International Politics. 3 cr. hrs.
Research in international politics. Focuses on traditional international topics of international politics or contemporary problems. Topics may include Japanese and German foreign policy. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6960. Research Seminar in Political Philosophy. 3 cr. hrs.
Research in a broad area of political philosophy. Focuses on individual thinkers (e.g., Plato, Aristotle, Machiavelli, Rousseau) or on contemporary problems. May be taken more than once. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6986. Internship in Political Science. 1-3 cr. hrs.
Practical learning experience in politics. Requires appropriate written work relating the experience to appropriately broad academic literature on the subject. Arrangements to be worked out by student, faculty member and agency concerned. Normally may be taken only once. S/U grade assessment. Prereq: Cons. of dir. of graduate studies; degree status in the POSC or INAF program; and at least one related course.

POSC 6995. Independent Study in Political Science. 1-4 cr. hrs.
Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 6998. Professional Project in Political Science. 1-12 cr. hrs.

POSC 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9977. Field Placement Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9978. Field Placement Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9979. Field Placement Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.
POSC 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.  
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.  
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.  
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.

POSC 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.  
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch., cons. of graduate prog. dir., or cons. of adviser.
Psychology (PSYC)

Director of Clinical Training: James Hoelzle, Ph.D.
Chairperson: Stephen Saunders, Ph.D.
Department of Psychology website (http://www.marquette.edu/psyc/)

Degree Offered
Doctor of Philosophy, Master of Science

Program Description
The Department of Psychology offers courses and training leading to the doctor of philosophy (Ph.D.) in psychology, with specializations in either clinical psychology (https://www.marquette.edu/grad/programs-clinical-psychology.php) or behavior analysis (https://www.marquette.edu/grad/programs-applied-behavior-analysis.php). The department also offers courses and training leading to the master of science (M.S.) with a specialization in behavior analysis.

The clinical psychology (https://www.marquette.edu/grad/programs-clinical-psychology.php) program is accredited by the American Psychological Association (APA). Courses cover scientific areas of psychology, research methods and professional practice skills including assessment, psychotherapy, consultation and supervision. Supervised clinical experiences are planned throughout the curriculum. Practica are available at the Department of Psychology’s Center for Psychological Services and with collaborating agencies in the Milwaukee area. Doctoral students in the clinical psychology specialization acquire a master of science degree with a specialization in clinical psychology as they progress toward their doctoral degree.

For both the master of science and doctoral programs in behavior analysis (https://www.marquette.edu/grad/programs-applied-behavior-analysis.php), course sequences cover basic, applied, and translational research, research methods, and professional and ethical issues. These sequences have been verified as meeting the requirements set forth by the Behavior Analysis Certification Board. Supervised practicum experience is offered both by the program faculty and through community providers.

Prerequisites for Admission
The psychology program regards training in the breadth of psychology and its research foundations as the best preparation for graduate study in psychology. An undergraduate major in psychology is desirable but not required. Research experience is strongly recommended.

Application Deadlines
Clinical Psychology Ph.D. program: Applications must be complete by December 1.
Behavior Analysis M.S. program: Priority consideration will be given to applications that are complete by December 1 for the fall term. Applications to the master’s program will be accepted on a rolling basis beyond the deadline as space permits.
Behavior Analysis Ph.D. program: Applications must be complete by December 1.

Application Requirements
Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.
3. A personal statement of 1,000 words or fewer that includes discussion of academic and professional experiences and goals. The statement should comment on how the applicant's experiences and/or interests would contribute to fostering diversity in the clinical psychology program. An individual’s ability to enrich diversity to the program, in addition to his/her very presence, can involve, but is not limited to, personal identity (e.g., ethnic identity, religious identity, national origin), intellectual contributions (typically in the form of research interests), and/or personal history or experiences that allow the applicant to bring a unique perspective/worldview (e.g., history of overcoming significant disadvantage, first in family to go to college). The program invites applicants that are particularly interested in diversity-related issues, in either research and/or clinical practice, to request consideration for the Department of Psychology Diversity Graduate Assistantship and/or the Graduate School Diversity Fellowship. All applicants that believe they would contribute positively to the diversity of the program are invited to state in their application that they would like to be considered for the Diversity Graduate Assistantship/Fellowship.
4. Three letters of reference from individuals familiar with the applicant’s academic work and/or research experience.
5. Graduate Record Examination (GRE) test scores (General Test).
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

The highest ranking applicants will be invited to an interview.
Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student's record.

MULTICULTURAL AWARENESS AND PROFESSIONAL INTEGRATION PROGRAM (MAPIP)

The MAPIP program is specialized training available to graduate students in the Psychology Department. It is intended to assist students in gaining additional knowledge of multicultural issues. This includes increased awareness of the multicultural psychology research, increased understanding of diverse groups and cultures, and self-reflection of how diversity awareness can be integrated into their professional careers. For more information about this program please visit the MAPIP website (http://www.marquette.edu/psyc/about_diversity_mapip.shtml/).

Psychology Master's Requirements

Specializations: Behavior Analysis, Clinical Psychology

A master's student must complete a program of study defined, in conjunction with the director of graduate studies, on an approved Master's Program Planning Form.

The student is required to complete a satisfactory master's thesis or professional project and must pass an oral defense. The defense is overseen by a committee of three department faculty and the defense constitutes the master's comprehensive exam.

SPECIALIZATION REQUIREMENTS

BEHAVIOR ANALYSIS

The program requires a total of 30 credit hours beyond the baccalaureate degree including: 6 credit hours of master's thesis or professional project work, completion of an approved master's thesis or professional project and 24 credit hours of course work.

Required courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PSYC 5800</td>
<td>Applied Behavior Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 5820</td>
<td>Concepts and Principles of Behavior</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 6135</td>
<td>Single Subject Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 6840</td>
<td>Verbal Behavior</td>
<td>3</td>
</tr>
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<td>PSYC 6860</td>
<td>Functional Assessment and Treatment</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 6870</td>
<td>Ethical and Professional Conduct for Behavior Analysts</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 6880</td>
<td>Behavioral Consultation and Supervision</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 6968</td>
<td>Practicum in Behavior Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 6999</td>
<td>Master's Thesis</td>
<td>6</td>
</tr>
<tr>
<td>or PSYC 6998</td>
<td>Professional Project in Psychology</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 30

CLINICAL PSYCHOLOGY

The program requires a total of 36 credit hours of course work beyond the baccalaureate degree including: 6 credit hours of master’s thesis work, completion of an approved master’s thesis and 30 credit hours of course work. Note: The only students eligible to earn this specialization are those students admitted to the psychology doctoral program's clinical psychology specialization. Doctoral students earn the master's degree as part of the doctorate course of study.

Required courses:

Choose 30 credit hours from the following:

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>PSYC 8401</td>
<td>Abnormal Psychology</td>
</tr>
<tr>
<td>PSYC 8420</td>
<td>Principles of Child Psychopathology and Intervention</td>
</tr>
<tr>
<td>PSYC 8525</td>
<td>Advanced Personality Psychology</td>
</tr>
<tr>
<td>PSYC 8630</td>
<td>Advanced Developmental Psychology</td>
</tr>
<tr>
<td>PSYC 8660</td>
<td>Advanced Social Psychology</td>
</tr>
<tr>
<td>PSYC 8740</td>
<td>Foundations and Processes of Human Cognition</td>
</tr>
<tr>
<td>PSYC 8780</td>
<td>Biological Bases of Behavior</td>
</tr>
<tr>
<td>PSYC 8301</td>
<td>Psychological Assessment 1</td>
</tr>
<tr>
<td>PSYC 8302</td>
<td>Psychological Assessment 2</td>
</tr>
</tbody>
</table>
**PsychologyDoctoral Requirements**

**Specializations:** Behavior Analysis, Clinical Psychology

A doctoral student must complete a program of study defined, in conjunction with the program director or director of graduate studies, on an approved Doctoral Program Planning Form. Students obtain a master's degree while in the doctoral program.

The student is required to complete a satisfactory master's thesis and pass an oral defense. The defense is overseen by a committee of three department faculty and the defense constitutes the master's comprehensive exam.

Students who successfully defend their master's thesis and who have completed the required number of credits for their chosen specialization are awarded the master's degree.

Students must successfully complete the DQE to be advanced to doctoral candidacy.

Clinical psychology doctoral students must complete an internship approved by the Psychology Department. Before the student is permitted to apply for internship, personal and professional readiness must be verified. Readiness is evaluated by both a review of the student's graduate study portfolio and a clinical exam, which entails an oral examination of necessary clinical skills. Permission is granted only to students whose proposal has been approved.

A public defense of the dissertation is conducted only after the student has completed all other formal requirements for the doctoral degree, with the possible exception of the internship. To conduct research projects, permission from the university Institutional Review Board must be obtained.

**Specialization Requirements**

**Behavior Analysis**

The program requires a total of 66 credit hours of course work beyond the baccalaureate degree including: 6 credit hours of master's thesis work, completion of an approved master's thesis, successful completion of a doctoral qualifying examination (DQE), 12 credit hours of dissertation work, submission of an approved dissertation and a practicum.

Required courses:

<table>
<thead>
<tr>
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<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC 5800</td>
<td>Applied Behavior Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 5820</td>
<td>Concepts and Principles of Behavior</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 6135</td>
<td>Single Subject Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 6840</td>
<td>Verbal Behavior</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 6860</td>
<td>Functional Assessment and Treatment</td>
<td>3</td>
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<tr>
<td>PSYC 6870</td>
<td>Ethical and Professional Conduct for Behavior Analysts</td>
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<td>Behavioral Consultation and Supervision</td>
<td>3</td>
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<td>PSYC 6968</td>
<td>Practicum in Behavior Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 6999</td>
<td>Master's Thesis</td>
<td>6</td>
</tr>
<tr>
<td>Translational Foundations</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>PSYC 8101</td>
<td>Advanced Statistics and Design 1</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 8102</td>
<td>Advanced Statistics and Design 2</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 8115</td>
<td>Advanced Basic Research</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 8125</td>
<td>Advanced Research Methods</td>
<td>3</td>
</tr>
</tbody>
</table>
Clinical Psychology

The program requires a total of 81 credit hours of course work beyond the baccalaureate degree including: semesterly enrollment in and attendance at a non-credit colloquium (PSYC 8952 Colloquium in Psychology), 6 credit hours of master’s thesis work, completion of an approved master’s thesis, successful completion of a doctoral qualifying examination (DQE), 12 credit hours of dissertation work, submission of an approved dissertation and an approved internship (PSYC 8986 Internship in Clinical Psychology).

Required courses:

21 credit hours in substantive core courses
- PSYC 8401 Abnormal Psychology
- PSYC 8420 Principles of Child Psychopathology and Intervention
- PSYC 8525 Advanced Personality Psychology
- PSYC 8630 Advanced Developmental Psychology
- PSYC 8660 Advanced Social Psychology
- PSYC 8740 Foundations and Processes of Human Cognition
- PSYC 8780 Biological Bases of Behavior

6 credit hours in assessment
- PSYC 8301 Psychological Assessment 1
- PSYC 8302 Psychological Assessment 2

9 credit hours in intervention
- PSYC 8321 Clinical Interviewing
- PSYC 8322 Theories of Psychotherapy 1
- PSYC 8332 Theories of Psychotherapy 2

6 credit hours in practice core courses
- PSYC 8965 Advanced Practicum in Clinical Psychology

3 credits of consultation/supervision
- PSYC 8360 Consultation and Supervision Strategies

6 credit hours in professional practice
- PSYC 8201 Ethics and Professional Issues in Clinical Psychology
- PSYC 8202 Multicultural Issues in Clinical Psychology

9 credit hours in research core courses
- PSYC 8101 Advanced Statistics and Design 1
- PSYC 8102 Advanced Statistics and Design 2
- PSYC 8125 Advanced Research Methods

6 credit hours of master's thesis work
- PSYC 6999 Master's Thesis

12 credit hours of dissertation work
- PSYC 8999 Doctoral Dissertation

Graduate Elective
- 3 credits

Total Credit Hours
81

Courses

PSYC 5330. Human Factors Engineering. 3 cr. hrs.
Practical application of theories of human cognition, memory, sensation, perception and motor performance to person-machine interaction, equipment design and control of human error are reviewed. Includes design of controls and displays, automation, artificial intelligence, occupational stress, accident analysis and prevention, workspace and environmental factors that influence optimal performance.
PSYC 5350. The Psychology of Death and Dying. 3 cr. hrs.

PSYC 5800. Applied Behavior Analysis. 3 cr. hrs.
Introduction to topics in applications and research methods in behavior analysis, a science involving the study of human behavior and environmental variables that affect behavior. Topics include a review of basic learning principles, ABA research methods and applications of ABA.

PSYC 5820. Concepts and Principles of Behavior. 3 cr. hrs.
Provides an introduction to learning and the philosophy and science of behavior analysis, including topics which focus on basic principles of respondent (classical) and operant conditioning, as well as single subject research methods. Exposes students to experimental psychology research pertaining to the subject matter of human and animal learning.

PSYC 6135. Single Subject Research Methods. 3 cr. hrs.
Designed to provide a pragmatic and conceptual understanding of single subject experimental design and its role in both science and application. Covers broad issues related to the scientific study of behavior as well as specific issues related to direct measurement, single subject design and evaluation, visual and statistical analysis of data. Prereq: Admission to behavior analysis specialization; or cons. of instr.

PSYC 6840. Verbal Behavior. 3 cr. hrs.
Provides an analysis of human language in objective terms. The goals are: (a) to distinguish language from non-language behavior by the way it achieves its effect on the environment, (b) to develop an understanding of elementary verbal relations with some emphasis on motivational variables, (c) to provide a conceptual understanding of a behavioral approach to language, (d) to discuss critiques of Skinner’s Verbal Behavior, (e) to develop skills in program curricula for teaching language to individuals with disabilities, and (f) to develop critical thinking skills and a repertoire for evaluating published research. Prereq: Admission to behavior analysis specialization; or cons. of instr.

PSYC 6859. Functional Assessment and Treatment. 3 cr. hrs.
Designed to provide an overview of the three functional assessment methods currently in use (indirect methods, descriptive assessment and functional analysis) and review the defining characteristics, major procedural variations, strengths and weaknesses of each approach. Examines current research involving modifications and extensions of current functional analysis methodology and function-based interventions. Prereq: Admission to behavior analysis specialization; or cons. of instr.

PSYC 6870. Ethical and Professional Conduct for Behavior Analysts. 3 cr. hrs.
Designed to examine ethical and professional issues pertaining to behavior analysts working in clinical, educational and academic settings in order to fulfill the Ethical and Professional Conduct requirements for the Behavior Analysis Certification Board (BACB) and the Accreditation Standards of the Association for Behavior Analysis International. Prereq: Admission to behavior analysis specialization; or cons. of instr.

PSYC 6880. Behavioral Consultation and Supervision. 3 cr. hrs.
Develop and refine competencies in behavioral consultation and supervision of others, and provide opportunities for students to practice consultation and supervision skills. Special consideration is given to designing interventions, implementing, managing and supervising applied projects. Topics include the identification and selection of problems and target populations, analysis of problems and goals, designing measurement systems, developing interventions and disseminating products from applied behavioral research. Prereq: Admission to behavior analysis specialization; or cons. of instr.

PSYC 6956. Acceptance and Commitment Therapy Seminar. 0 cr. hrs.
Provides an introduction to Acceptance and Commitment Therapy (ACT). Topics include the therapy modality, case discussions, and experiential learning. Prereq: Admission to CLPS program.

PSYC 6968. Practicum in Behavior Analysis. 1-3 cr. hrs.
Designed to provide students with hands-on experience with behavior analytic assessment and intervention programming to individuals with intellectual and developmental disabilities (IDD). Prereq: Admission to behavior analysis specialization; or cons. of instr.

PSYC 6997. Professional Project in Psychology. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dir. of graduate studies.

PSYC 6998. Professional Project in Psychology. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dir. of graduate studies.

PSYC 8101. Advanced Statistics and Design 1. 3 cr. hrs.
Covers inferential statistics commonly used in psychological research. Topics include: probability and hypothesis testing; t-tests; one-way, two-way, and repeated measures analysis of variance; post-hoc and planned comparisons; correlation; bivariate regression; non-parametric statistics; power and effect size. Emphasizes identifying the appropriate statistical model for a research question, understanding the assumptions underlying the tests, and being able to compute and interpret the test statistics accurately. Use of statistical packages. Prereq: Admission to clinical program or cons. of dept. ch.

PSYC 8102. Advanced Statistics and Design 2. 3 cr. hrs.
Statistics covered include: multiple regression, logistic regression, multivariate analysis of variance and covariance, principal components analysis, and exploratory factor analysis. Covers psychometric concepts and procedures related to item selection, scale construction, reliability and validity. Emphasizes identifying the appropriate statistical model for a research question, understanding the assumptions underlying the tests, and being able to compute and interpret the test statistics accurately. Continued use of statistical packages. Prereq: PSYC 8101 and admission to clinical program or cons. of dept. ch.
PSYC 8115. Advanced Basic Research. 3 cr. hrs.
Designed to provide an advanced survey of theory-driven human and non-human animal research, including quantitative models of behavior, renewal, resurgence, and behavioral momentum, among others. Prereq: Admission to behavior analysis specialization; or cons. of instr.

PSYC 8125. Advanced Research Methods. 3 cr. hrs.
Focuses on research design principles relevant to psychology and related disciplines. Emphasizes the development of skills in logic, critical analysis, and scientific writing. Covers basic principles of experimental and non-experimental design; principles of reliability and validity; strategies of data analysis and data collection methods. Students evaluate existing research and generate an original research proposal. Prereq: PSYC 8101 or equiv. and cons. of instr. or admission to clinical program.

PSYC 8201. Ethics and Professional Issues in Clinical Psychology. 3 cr. hrs.
A study of professional ethics drawing on APA guidelines, state statutes, research and case studies. Consideration of practice issues relevant to clinical psychology. Active participation in seminar presentations and formulation and resolution of ethical dilemmas. Prereq: Cons. of instr. or admission to clinical program.

PSYC 8202. Multicultural Issues in Clinical Psychology. 3 cr. hrs.
Designed to provide training in the culturally informed practice of clinical psychology. Students learn to recognize and understand dimensions of cultural diversity in our communities, including, but not limited to: race, ethnic background and identity, sexual orientation, and religion. Trains students in developing culturally competent psychological interventions with individuals from diverse groups. Prereq: Cons. of instr. or admission to clinical program.

PSYC 8301. Psychological Assessment 1. 3 cr. hrs.
Development of skills in the administration, scoring, interpretation, and integration of individual intelligence and achievement tests. Development of basic clinical assessment skills and understanding of the nature, development, etiology, and implications of individual differences in intelligence. Prereq: Admission to clinical program.

PSYC 8302. Psychological Assessment 2. 3 cr. hrs.
Extension of the assessment skills developed in PSYC 8301; the administration and interpretation of projective technique with emphasis on the Rorschach and TAT; special emphasis on the MMPI and report writing. Prereq: PSYC 8301 and admission to clinical program.

PSYC 8321. Clinical Interviewing. 3 cr. hrs.
Basic listening skills, interviewing to establish diagnoses and treatment goals and plans, and the development of the therapist-client relationship. Prereq: Admission to graduate program or cons. of instr.

PSYC 8322. Theories of Psychotherapy 1. 3 cr. hrs.
Focuses on interpersonal, client-centered, and psychodynamic models of psychotherapy. Covers conceptual foundations, intervention strategies, and empirical research on effectiveness. Prereq: PSYC 8321; admission to graduate program or cons. of instr.

PSYC 8332. Theories of Psychotherapy 2. 3 cr. hrs.
Focuses on the cognitive, behavioral, and cognitive-behavioral models of psychotherapy. Covers conceptual foundations, intervention strategies, and empirical research on effectiveness. Prereq: PSYC 8321; admission to graduate program or cons. of instr.

PSYC 8340. Theories of Psychotherapy 3. 3 cr. hrs.
Elective course covering complementary, alternative and cross-cultural approaches to psychotherapy. Prereq: PSYC 8321; admission to graduate program or cons. of instr.

PSYC 8341. Family Therapy. 3 cr. hrs.
Focuses on the evaluation and treatment of problems in couple and family functioning. Introduces family systems theory and evaluates different models for assessing and intervening with couples and families. Prereq: Cons. of dept.

PSYC 8352. Psychological Evaluation and Treatment of Trauma. 3 cr. hrs.
Trauma-induced mental illnesses are extremely common among both the general population and especially particular populations, such as members of the military. Mental health professionals, including clinical psychologists, must be prepared to conduct competent evaluations of trauma-based problems and to provide competent treatment. Provides reviews of the theory behind trauma-related problems and of research into the development and treatment of trauma. Primarily, seeks to enhance students' skills in the practical application of evaluation and intervention techniques. Prepares students for future work at hospitals, VA systems and general mental health practice. Prereq: Previous graduate level coursework in assessment and psychotherapy interventions and admission to clinical program or cons. of instr.

PSYC 8360. Consultation and Supervision Strategies. 0-3 cr. hrs.
Students attend weekly seminar on supervision and consultation strategies and models. Students conduct supervision of other clinical students under supervision of instructor or other clinical faculty. Students attend both terms. Prereq: Cons. of dir. of clinical training.

PSYC 8401. Abnormal Psychology. 3 cr. hrs.
Scientific overview of psychopathology. Diagnostic criteria, etiology, and current treatments of important psychological disorders, including anxiety disorders, mood disorders, personality disorders, schizophrenia. Prereq: Cons. of instr. or admission to clinical program.

PSYC 8420. Principles of Child Psychopathology and Intervention. 3 cr. hrs.
Introduces research on the development of psychopathology in childhood, including attention to biological, family, and sociocultural influences on maladjustment. Describes approaches for intervening clinically with childhood problems such as Attention Deficit Hyperactivity Disorder, conduct disorder, depression, and anxiety. Prereq: Cons. of dept.
PSYC 8511. History and Theoretical Foundations of Psychology. 3 cr. hrs.
The history of psychology as a scientific discipline and of clinical psychology as a profession. Current relevant issues in the philosophy of science.
Relationship between different basic theoretical assumptions, personality theories, and perspectives on treatment. Theoretical issues in the study of individual differences and clinical interventions. Prereq: Cons. of instr. or admission to clinical program.

PSYC 8525. Advanced Personality Psychology. 3 cr. hrs.
Covers major theoretical models and empirical approaches to the study of the person. Emphasis is placed on the current science of personology, the study of the whole person in context and over time. Prereq: Cons. of instr. or admission to clinical program.

PSYC 8630. Advanced Developmental Psychology. 3 cr. hrs.
Presents a wide variety of theoretical and empirical approaches to understanding the development of the human being over the entire life course. Class readings and discussions provide the debates, concepts, methods, and findings present in the current scholarly dialogue concerning life-span developmental psychology. Prereq: Cons. of instr. or admission to clinical program.

PSYC 8660. Advanced Social Psychology. 3 cr. hrs.
Analysis of social psychological theory and research, including self processes, attitudes, persuasion, social influence, prejudice, group behavior, interpersonal relationships, aggression, and helping behavior. Prereq: Cons. of instr. or admission to clinical program.

PSYC 8665. Industrial Psychology and Organizational Development. 3 cr. hrs.
An experiential seminar for in-depth study of organizational diagnosis, change and development processes, motivation dynamics, creativity and innovation, leadership and group processes, negotiation, organizational culture and structure. Workshop format features interactive learning. Includes new trends from organizational research. Prereq: Cons. of instr.

PSYC 866B. Personnel Selection. 3 cr. hrs.
Theory and contemporary applications concerning job analysis; ability, aptitude, and personality, and other forms of pre-employment testing; racial fairness and bias in testing; performance appraisal; utility analysis for selection techniques; special selection requirements for management, sales, creative people, and other professionals; career choice and planning composition of work groups. Prereq: Cons. of instr.; completion of B.A. or B.S. in management, social sciences, or engineering.

PSYC 8740. Foundations and Processes of Human Cognition. 3 cr. hrs.
Examines the history, current theories and methods of cognitive psychology and cognitive neuroscience with emphasis on perception, attention, memory, language, and executive functions. Discusses the relevance of gender, age, and culture to cognitive process, as well as clinical applications. Prereq: Cons. of instr. or admission to clinical program.

PSYC 8780. Biological Bases of Behavior. 3 cr. hrs.
The nervous system as the mediator of behavior. Physiological and neural factors in sensation, motor response, instinct, emotion, learning, and thinking. Prereq: Cons. of instr. or admission to clinical program.

PSYC 8787. Psychopharmacology. 3 cr. hrs.
Study of the major classes of drugs, their physiological mechanisms of action, and their efficacy in the treatment of mental disorders. Prereq: PSYC 8780 or equiv., PSYC 8401, and cons. of instr. or admission to clinical program.

PSYC 8810. Translational Foundations of Applied Research. 3 cr. hrs.
Designed to provide a survey of the theoretical and experimental foundations of the practice of behavior analysis, including the basic principles of learning and behavior and the role of translational research to create a bridge between basic science and application. Prereq: Admission to behavior analysis specialization; or cons. of instr.

PSYC 8830. Advanced Conceptual Framework of Behavior Analysis. 3 cr. hrs.
Designed to provide an advanced survey of the conceptual framework that underpins behavior analytic theory and the philosophies of science that contributed to this approach. Prereq: Admission to behavior analysis specialization; or cons. of instr.

PSYC 8850. Skill Acquisition and Emergence. 3 cr. hrs.
Designed to familiarize students with behaviorally-based skill acquisition services delivered to individuals with ASD, intellectual disabilities and developmental disabilities. Everyday behavior and how it changes are explained by learning principles derived from an analysis of scientific research. Students learn procedures that derive from behavioral principles and practice implementing those procedures within assigned projects. Prereq: Admission to behavior analysis specialization; or cons. of instr.

PSYC 8931. Topics in General Psychology. 3 cr. hrs.
Contemporary theoretical and research trends, particularly in areas of experimental, social, developmental, abnormal, quantitative or physiological psychology. Prereq: Cons. of dir. of clinical training.

PSYC 8932. Advanced Topics in Clinical Psychology. 3 cr. hrs.
Seminar format that examines special topics related to the assessment, etiology, or treatment of psychological problems. A maximum of 3 credit hours can be applied to the degree. Prereq: Cons. of dir. of clinical training.

PSYC 8952. Colloquium in Psychology. 0 cr. hrs.
Research and scholarly reports on selected topics in scientific and professional psychology by visiting investigators, departmental faculty and graduate students. SNC/UNC grade assessment. Attendance required of all full-time regular students.
PSYC 8953. Introduction to Professional Practice. 0 cr. hrs.
Seminar for first-year graduate students. Introduces the clinical program expectations and requirements, including participation in group supervision, assistantship duties, and adjusting to graduate school. Prereq: First year student in CLPS or cons. of dept. ch.

PSYC 8954. Advanced Professional Practice Seminar. 0 cr. hrs.
Seminar for second-year graduate students. Reviews clinical program expectations and requirements, including material related to clinical evaluations and interventions, externships, master's theses, and assistantship duties. Focuses on professional identity development. Prereq: Second year student in CLPS or cons. of dept. ch.

PSYC 8955. Seminar in Teaching of Psychology. 0 cr. hrs.
Covers some of the theories and strategies of effective teaching, including creating syllabi, course management, lecture styles, student management issues, creating tests, and grading and assessment strategies. Available to third and fourth year students. Meets all year, once or twice per month. Incorporates practice lectures with feedback. For students who plan to teach for the department or who plan on teaching as part of their careers. Students must attend both terms. SNC/UNC grade assessment. Prereq: Cons. of instr. and admission to clinical program.

PSYC 8956. Professional Development Seminar. 1 cr. hr.
Designed to provide students with professional development experiences related to the profession of behavior analysis. Students present topics related to behavior analysis. Other speakers include relevant faculty members from Marquette or other universities, behavior-analytic practitioners or other autism-related professionals from the community. Prereq: Admission to behavior analysis specialization; or cons. of instr.

PSYC 8965. Advanced Practicum in Clinical Psychology. 0-6 cr. hrs.
Supervised experience in psychological assessment, interventions, and consultation. Students enroll in 6 credit hours over the course of study. A maximum of 6 credit hours can be applied to the degree. 0 credit will be SNC/UNC grade assessment; 1-6 credits will be graded. Prereq: Admission to clinical program.

PSYC 8975. Introduction to Neuropsychological Assessment. 0-3 cr. hrs.
Provides advanced training in neuropsychological assessment. Focuses on the selection, administration and scoring of neuropsychological tests, as well as formulating test interpretations and communicating test results through written reports and oral presentations. Provides didactic training in neuropsychological disorders. Over the course of study, a maximum of 3 credit hours can be applied to the degree. 0 credit will be SNC/UNC grade assessment; 1-3 credits will be graded. Prereq: Admission to clinical program.

S/U grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PSYC 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.
PSYC 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.

PSYC 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dir. of clinical training.
Public Service (PUBS)

Program Director: Sam Harshner, Ph.D.
Center for Urban Research, Teaching and Outreach website (http://www.marquette.edu/urban-research-teaching-outreach/)

Degree Offered
Master of Arts in Public Service, Plan B only

Program Description
Public Service (https://www.marquette.edu/grad/programs-public-service.php) is an interdisciplinary program in which students pursue focused study in the nonprofit sector. The program seeks to provide training for individuals who plan a career in a community organization or other nonprofit agency. Students learn about budgets, board memberships, personnel oversight, corporate statutes, program development, and relations between government and the nonprofit sector. This program also focuses on the study of topics crucial to urban and international nonprofits, including: inequality; race, ethnicity, and language; social movements; and political participation.

Prerequisites for Admission
Applicants must hold a baccalaureate degree, or its academic equivalent, from a college or university of recognized standing. The undergraduate background must be appropriate to the chosen course of study. Generally, applicants should have a minimum cumulative grade point average of 3.000 (on a scale of 4.000) in their undergraduate course work. Previous professional experience will be a serious consideration in the admission decision. International students should have a TOEFL score of 100 or higher.

Application Requirements
Applicants must submit, directly to the Graduate School:
1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.
3. Two letters of recommendation from academic or professional sources. A third recommendation letter is encouraged.
5. Official test scores from the GRE (preferred), GMAT, or LSAT. May be waived if the applicant has completed an advanced degree – M.A., M.S., M.B.A., Ph.D., J.D., or M.D.
6. (For international applicants only) an overall minimum TOEFL score of 100 or other acceptable proof of English proficiency.

Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

Master of Arts in Public Service
Specialization: Nonprofit Sector

Students must complete a total of thirty (30) credit hours of course work for the master of arts in public service with the nonprofit sector specialization.

Students must complete 9 credits of required core course work, including a professional project, and 21 credits of elective course work.

Students must complete the program within six years. Students are expected to earn a B or above in all courses and must maintain a 3.000 cumulative grade point average to earn the degree of master of arts in public service.

Nonprofit Sector

Students must complete a total of 30 credit hours of course work:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PUBS 6210</td>
<td>Ethics in Public Service</td>
<td>3</td>
</tr>
<tr>
<td>NPSE 6521</td>
<td>Trends in the Social Sector: Social Innovation and Systems Change</td>
<td>3</td>
</tr>
<tr>
<td>PUBS 6998</td>
<td>Professional Project in Public Service</td>
<td>3</td>
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<tr>
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<td>15 credits of specialization-focused course work (choose five courses from the following):</td>
<td>15</td>
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<tr>
<td>NPSE 6525</td>
<td>Financial Matters in the Non-Profit Sector</td>
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<tr>
<td>NPSE 6530</td>
<td>Social Justice and Social Activism</td>
<td></td>
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<tr>
<td>POSC 6281</td>
<td>Urban Public Policy</td>
<td></td>
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<tr>
<td>PUBS 6215</td>
<td>Nature of Cities</td>
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PUBS 6230 Legal Issues in Public Service
PUBS 6235 Communication and the Management Process in Urban Service
PUBS 6237 Nonprofit Management
PUBS 6250 Governmental-Nonprofit Relations
PUBS 6540 Revenue Generation and Program Development
PUBS 6931 Topics in Public Service
Two additional elective courses either from the list above or approved by program director.  6
Total Credit Hours 30

Nonprofit Sector Courses

Overview of the changes in the nonprofit (or social) sector over the last generation that have led to an increased focus on innovation, data and long-term results. Examination of the factors driving these changes, as well as the opportunities and challenges they present. Interaction with local leaders who are making a difference. Development of an understanding of the skill sets needed to achieve results in today’s environment, including collaboration, social entrepreneurship and systems thinking.

NPSE 6525. Financial Matters in the Non-Profit Sector. 3 cr. hrs.
Examination of various financial issues affecting the non-profit sector including: fund-raising from donors and foundations, grant proposals, budgeting, and personnel/program costs. Prereq: NPSE 6520.

NPSE 6530. Social Justice and Social Activism. 3 cr. hrs.
Examines the meaning and implications of social justice; considers the history of social activism from both religious and non-sectarian traditions. Prereq: NPSE 6520.

NPSE 6535. Legal Aspects of the Non-Profit Sector. 3 cr. hrs.
Examines a range of legal issues that confront non-profits including: articles and by-laws, fiduciary obligations, governance and boards of directors, charitable solicitations, and for-profit ventures. Prereq: NPSE 6520.

NPSE 6540. Restorative Justice. 3 cr. hrs.
Examines the complex, dynamic relationship between traditional justice system approaches and emerging policy, theory and research in restorative and community justice. Emphasis on the challenges of administering transformative justice within a diverse, multicultural population and the roles played by the three key stakeholder groups: victims, offenders, and community. Explores the vision associated with this unconventional paradigm, along with a range of issues related to its operational implementation. Contrasts restorative justice with the dominant retributive/punitive model of justice and provides an introduction to a variety of both established and emerging applications including victim/offender reconciliation programs and family/group conferencing.

NPSE 6931. Topics in Non-Profit Sector. 1-3 cr. hrs.
Examination of topics related to contemporary issues in the non-profit sector.

NPSE 6995. Independent Study in Non-Profit Sector. 1-3 cr. hrs.
Provides opportunities to investigate and study areas of interest through readings, research, field experience, projects, and/or other educational activities under the direction of a faculty adviser.

Public Service Courses

PUBS 6000. History and Theory of Leadership and Ethics. 3 cr. hrs.
Prizes analysis of historical concepts regarding leadership with a special focus on leadership ethics.

PUBS 6025. Research Methods in Social Sciences. 3 cr. hrs.
Students read empirical research studies for the purposes of interpretation and evaluation. Students learn how to write research questions and hypotheses. Methods of estimating and interpreting validity and reliability are studied as well as common research methods and designs for quantitative and qualitative social science studies. The culminating assignment includes constructing a research proposal ready to submit to the Office of Research Compliance(ORC). Prereq: LEDR 6000.

PUBS 6051. Contemporary Leadership: Theory, Research and Application. 3 cr. hrs.
In-depth study of the transformational and transactional leadership model of Bass and Riggio and a review of emerging thought on authentic leadership. Learning activities include an in-depth review of the literature on transformational and transactional leadership theory; in-class and online discussion and design and presentation of either a qualitative or quantitative study in contemporary leadership, inclusive of drafting an actual research proposal. Prereq: LEDR 6000.
PUBS 6210. Ethics in Public Service. 3 cr. hrs.
Examines ethical dilemmas and the implications of behaviors, decisions and policies made by those whose actions affect the public good. Examines public, non-profit and private sector ethics in relation to contemporary literature and classical theory. Studies the unique ethical dilemmas that face those employed in the public sector. Assesses how administrative work is influenced by culture, religion, agency dynamics, formal rules, professional standards, bureaucratic restraints and democratic norms. Examines the role of legislation in its attempt to limit unethical behavior. Emphasizes the ethical consequences of policy making decisions and the ethical responsibility that those in public service must recognize while serving as stewards of the public trust.

PUBS 6215. Nature of Cities. 3 cr. hrs.
An interdisciplinary examination of the individual, group, and institutional aspects of everyday life in urban America. Addresses both historical and contemporary contexts.

PUBS 6220. Organizational Behavior in Public Service. 3 cr. hrs.
Application of organizational behavior theory, concepts and models in public service and non-profit environments. Studies socially responsible behavior as related to global issues.

PUBS 6230. Legal Issues in Public Service. 3 cr. hrs.
Reviews and assesses the legal framework which forms the foundation for public service administration in the United States today. Examines how the American legal system represents one of the issues which public administrators must deal with daily in their efforts to develop and carry out public policy and manage programs. Enables students to analyze significant issues in public service as they deal with the impact the legal process has on their administrative decisions.

Communication challenges in the public service sector whether in institutional or community settings. Explores the communication process, including perception, attribution, and verbal and nonverbal communication. Additional considerations will be given to cross-cultural decision-making, and conflict resolution in both interpersonal and group settings.

PUBS 6237. Nonprofit Management. 3 cr. hrs.
Offers students knowledge of leadership skills and philosophies of management in the nonprofit sector.

PUBS 6240. Urban Public Sector Economics. 3 cr. hrs.
Examination of municipal finance and budgetary concerns, economics of land development, and fiscal oversight in the public sector.

PUBS 6250. Governmental-Nonprofit Relations. 3 cr. hrs.
Explores how nonprofits influence and are influenced by public decision-making, examining the role of nonprofits vis-à-vis the public sector broadly and in public policy formation specifically. Encourages students to critically analyze management issues that constrain and define the nonprofit sector, with a particular focus on its close relationship with the government. Topics include models of government-nonprofit relations; public policies toward nonprofits (tax policies, government regulation, charitable giving); accountability; policy advocacy and legislative lobbying; government financing of nonprofit service provision; best practices in policy-oriented nonprofit management; and underlying normative issues that arise in organizations receiving public funding. Prereq: Cons. of dept. ch.

PUBS 6281. Urban Policy and Public Service Administration. 3 cr. hrs.
Introduces the institutions and politics that shape urban public policy. Explores who is involved and influential in urban policy, the power relations in metropolitan America, and how governing coalitions shape and create social change within cities. Examines urban public policy challenges, including racial and income inequalities, housing, education, transportation, law enforcement, economic development and environmental justice. Prereq: Cons. of dept. ch.

PUBS 6540. Revenue Generation and Program Development. 3 cr. hrs.
Gives students basic skills in fundraising, revenue development and grant writing in the nonprofit sector.

PUBS 6571. Economics and Budgeting of Policing. 3 cr. hrs.
Examination of finance and budgeting concerns, economics and fiscal oversight in a law enforcement agency. Great emphasis on the role of a chief executive of a law enforcement agency as related to budget preparation, submission, operation and tracking.

PUBS 6581. Urban Policy and Public Service Administration. 3 cr. hrs.
Introduces the institutions and politics that shape urban public policy. Explores who is involved and influential in urban policy, the power relations in metropolitan America, and how governing coalitions shape and create social change within cities. Examines urban public policy challenges, including racial and income inequalities, housing, education, transportation, law enforcement, economic development and environmental justice. Prereq: Cons. of dept. ch.

PUBS 6694. Practicum in Public Service. 3 cr. hrs.
Offers the opportunity to gain experience in community organizations. Must be directed by a faculty member.

PUBS 6995. Independent Study in Public Service. 1-3 cr. hrs.
Provides opportunities to investigate and study areas of interest through readings, research, field experience, projects, and/or other educational activities under the direction of a faculty adviser. Prereq: Cons. of dept. ch. and cons. of prog. dir.
PUBS 6998. Professional Project in Public Service. 3 cr. hrs.
Required for the integrative learning experience. Must be taken twice, over two terms, for a total of 6 credits. Two options: 1) complete a professional project or 2) complete a research article of publishable quality. S/U grade assessment.

PUBS 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PUBS 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PUBS 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PUBS 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PUBS 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PUBS 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PUBS 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PUBS 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

PUBS 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Theology (THEO) / Religious Studies (REST)

Chairperson: Danielle K. Nussberger, Ph.D.
Department of Theology Graduate Programs website (https://www.marquette.edu/theology/graduate-program-overview.php)

Degrees Offered

Theology
Master of Arts in Theology (M.A.)
Master of Arts in Christian Doctrine (M.A.C.D.)

Religious Studies
Doctor of Philosophy (Ph.D.)

Program Descriptions

The Department of Theology offers graduate programs aimed at providing students an integrated approach to theology emphasizing the scriptural, historical, systematic, and ethical approaches to study in the Catholic and Christian religious traditions. We aim to develop scholars capable of making significant contributions to theological research and teaching a broad range of subjects in theology and religion. Our programs have prepared graduates to secure teaching positions in over 200 colleges, universities, and other educational institutions as well as for vocations in pastoral ministry and other service-oriented and non-profit organizations.

The Master of Arts in Theology (M.A.) program is intended primarily for students who intend to pursue doctoral degrees in theology or religious studies. It also serves those working or aspiring to work in Church-related organizations involving teaching, religious formation, or other forms of theological communication.

The Master of Arts in Christian Doctrine (M.A.C.D.) program focuses on ecumenical appropriation and communication of Christian doctrine for students teaching or aspiring to teach in Catholic high schools, those interested in contributing to other avenues of religious education or formation, those interested in serving other pastoral needs in their religious communities, and those seeking personal theological enrichment.

The Doctor of Philosophy in Religious Studies (Ph.D.) program leads to a terminal academic degree signifying its recipient's advanced ability to teach and conduct research in the academic specialization of his or her choosing. Options for specialization include Judaism and Christianity in Antiquity, Historical Theology, Systematics Theology, Theological Ethics, and Theology and Society (including Healthcare and Medical Ethics).

Prerequisites for Admission

Master of Arts in Theology (M.A.) applicants should have an undergraduate degree with a major in theology, religious studies, or another field appropriate to their theological interests. An undergraduate degree with a minor in one of those fields is also acceptable. Ideally, applicants should possess basic familiarity with Christian Scripture and doctrines. Opportunities to make up for deficiencies in undergraduate education are available to students in need.

Master of Arts in Christian Doctrine (M.A.C.D.) applicants should have (a) an undergraduate degree with a major in theology or religious studies, and/or (b) a personal or professional background involving theology or religion. Ideally, applicants should possess basic familiarity with Christian Scripture and doctrines. Opportunities to make up for deficiencies in undergraduate education are available to students in need.

Doctor of Philosophy in Religious Studies (Ph.D.) applicants should possess a master's degree or equivalent graduate degree in theology, religious studies, or another field appropriate to their academic interests.

Application Deadlines

Master of Arts in Theology (M.A.) applicants seeking financial aid must submit their completed applications, including all supporting documents, by December 15 of the calendar year prior to the fall academic term in which they wish to enroll in the program. The department normally will not consider requests for financial aid from applicants seeking to enroll in the spring or summer term. Applicants not seeking financial aid may submit their applications at any time, albeit no less than one month prior to the commencement of the academic term in which they wish to enroll in the program.

Master of Arts in Christian Doctrine (M.A.C.D.) applicants may submit their completed applications, including all supporting documents, at any time and may enroll in the program in the fall, spring, or summer academic term, albeit no less than one month prior to the commencement of the academic term in which they wish to enroll in the program. The department will consider requests for financial aid regardless of the term in which applicants wish to enroll in the program.

Doctor of Philosophy in Religious Studies (Ph.D.) applicants seeking financial aid must submit their completed applications, including all supporting documents, by December 15 of the calendar year prior to the fall academic term in which they wish to enroll in the program. The department normally will not consider requests for financial aid from applicants seeking to enroll in the
program in the spring or summer term. Applicants not seeking financial aid may submit their applications at any time, albeit no less than one month prior
to the commencement of the academic term in which they wish to enroll in the program.

Application Requirements

Applicants to all of the department's graduate programs must submit their applications to the Graduate School using its online application management
system (https://graduate.admissions.marquette.edu/apply/).

Applicants to the **M.A. program** must submit the following materials:

1. A completed application form and processing fee.
2. Copies of transcripts from all previously attended higher education institutions other than Marquette University.¹
3. Results of the Graduate Record Examination (General Test only).
4. A statement of purpose indicating the applicant's reasons for wanting to enter the program, areas of academic interest, vocational objectives,
   reasons for selecting Marquette's program, and/or how the applicant stands to contribute to the program's demographic diversity.
   a. Applicants lacking an undergraduate degree in theology or religious studies should indicate in their statements of purpose relevant college
course work reflected in their transcripts.
5. Three letters of recommendation.
6. International applicants must provide TOEFL scores or other acceptable proof of English proficiency.
   a. International applicants who have completed another master's degree or anticipate completing another master's degree at an English-speaking
   higher education institution prior to enrolling in the M.A. program may request a waiver of this requirement.

Applicants to the **M.A.C.D. program** must submit the following materials:

1. A completed application form and processing fee.
2. Copies of transcripts from all previously attended higher education institutions other than Marquette University.¹
3. A statement of purpose indicating the applicant's reasons for wanting to enter the program, areas of academic interest, vocational objectives,
   reasons for selecting Marquette's program, and/or how the applicant stands to contribute to the program's demographic diversity.
   a. Applicants lacking an undergraduate degree in theology or religious studies should indicate in their statements of purpose relevant college
course work reflected in their transcripts.
4. Three letters of recommendation.
5. International applicants must provide TOEFL scores or other acceptable proof of English proficiency.
   a. International applicants who have completed a master's degree or anticipate completing a master's degree at an English-speaking higher
   education institution prior to enrolling in the M.A.C.D. program may request a waiver of this requirement.

Applicants to the **Ph.D. program** must submit the following materials:

1. A completed application form and processing fee.
2. Copies of transcripts from all previously attended higher education institutions other than Marquette University.¹
3. Results of the Graduate Record Examination (General Test only).
4. A statement of purpose indicating the applicant's reasons for wanting to enter the program, areas of academic interest, vocational objectives,
   reasons for selecting Marquette's program, and/or how the applicant stands to contribute to the program's demographic diversity.
   a. Applicants with language study experience should indicate formal graduate-level language course work reflected in their transcripts and/or
   private language study, along with estimations of present abilities reading, writing, and speaking the language or languages studied.
5. An academic writing sample approximately 20 pages in length.
6. Three letters of recommendation.
   a. Applicants currently enrolled in Marquette's M.A. in Theology program must supply three new letters of recommendation speaking to their
   performances in the M.A. program.
7. International applicants must provide TOEFL scores or other acceptable proof of English proficiency.
   a. International applicants who have completed a master's degree or anticipate completing a master's degree at an English-speaking higher
   education institution prior to enrolling in the Ph.D. program may request a waiver of this requirement.

¹ Upon admission, final official transcripts from all previously attended higher education institutions, with certified English translations if their
original language is not English, must be submitted to the Graduate School. Failure to submit those transcripts within the first five weeks of the
student's term of enrollment may result in a registration hold barring the student from registering for future academic terms.

Master of Arts (M.A.) in Theology Requirements

**Specializations:** General Studies, Historical Theology, Judaism and Christianity in Antiquity, Systematic Theology/Theological Ethics, Theology and Society
Students must complete 30 credit hours of course work, pass a comprehensive examination and submit an approved final project. Students choosing the Judaism and Christianity in antiquity, historical theology, and systematic theology/theological ethics specializations must demonstrate proficiency in a modern language other than English. The following program description summarizes those requirements. Additional information may be found in the Department of Theology's Policies and Procedures (https://www.marquette.edu/theology/policies-and-procedures.php).

Required Course work

All students must complete the following required core courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>THEO 6110</td>
<td>Old Testament Method</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6120</td>
<td>New Testament Method</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6210</td>
<td>Origen to Late Medieval</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6220</td>
<td>Late Medieval to Early Modern</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6310</td>
<td>Introduction to Systematic Theology</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6410</td>
<td>Introduction to Theological Ethics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours: 18

Elective Course Options

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>THEO 6130</td>
<td>The Gospels (JUCA)</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6330</td>
<td>Christian Spirituality (SYTH/THET)</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6415</td>
<td>Catholic Social Encyclical Tradition (SYTH/THET)</td>
<td>3</td>
</tr>
</tbody>
</table>

All THEO courses numbered in the 8000, 8100, 8200 and 8300 ranges (JUCA)
All THEO courses numbered in the 8400 range (HITH)
All THEO courses numbered in the 8500 and 8600 ranges (SYTH/THET)

In consultation with their advisers and not later than the end of the first year of enrollment in the program, students must choose a specialization. Students' choice of specialization dictates the terms of their course of study.

Specialization Requirements

Specializations in Judaism and Christianity in Antiquity, Historical Theology, and Systematic Theology/Theological Ethics

For the following three specializations, students may pursue either of two academic plans: Plan A or Plan B. Students are assumed to opt for Plan B unless expressly approved by the department’s Graduate Committee to pursue Plan A instead.

- Judaism and Christianity in Antiquity (JUCA)
- Historical Theology (HITH)
- Systematic Theology/Theological Ethics (SYTH/THET)

Plan A Requirements

Plan A requires the 18 credit hours of core course work as listed above, 3 credit hours in each of the two areas not chosen for the specialization, and 6 credit hours of supervised research toward a master's thesis.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Required Course Work</td>
<td>18</td>
</tr>
<tr>
<td>THEO 6999</td>
<td>Master's Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>

Total Credit Hours: 30

Plan B Requirements

Plan B requires the 18 credit hours of core course work as listed above, 6 credit hours of elective course work in the area of the specialization, 3 credit hours in each of the two areas not chosen for the specialization, and the completion of a non-credit master's essay.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Required Course Work</td>
<td>18</td>
</tr>
<tr>
<td>THEO 6999</td>
<td>Master's Essay</td>
<td>0</td>
</tr>
</tbody>
</table>

Total Credit Hours: 30
FOREIGN LANGUAGE REQUIREMENT

Students choosing the Judaism and Christianity in antiquity, historical theology or systematic theology/theological ethics specialization are required to demonstrate proficiency in German, French or another modern language other than English essential to their research agenda. Students typically fulfill this requirement by earning a grade of B or above in course work or on a language examination administered by the Department of Languages, Literatures and Cultures (https://www.marquette.edu/languages-literatures-cultures/).

COMPREHENSIVE EXAMINATION

The comprehensive examination is administered by the department's M.A. Examination Committee. The exam is offered once annually in April, although the committee entertains requests to administer it in November as needed. The examination is in three parts, each of which has two sections:

2. Historical Theology: Origin to Late Medieval, Late Medieval to Early Modern
3. Systematic Theology and Theological Ethics

The three parts of the comprehensive examination, each two hours in duration, are taken at the same examination session. Each part consists of six questions, of which students must answer three, including at least one from each section. All questions are based on the comprehensive examination bibliography and questions posted to the Department of Theology’s website (https://www.marquette.edu/theology/forms-documents.php).

Specialization in General Studies

Students choosing the general studies option must opt for academic Plan B. They are required to complete the 18 credit hours of core course work as listed above, 12 credit hours of elective course work in any area or areas of specialization, and a non-credit master's essay.

<table>
<thead>
<tr>
<th>Required Course Work</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective Course Work (any area or areas of specialization)</td>
<td>12</td>
</tr>
<tr>
<td>Master's Essay</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Specialization in Theology and Society

Students choosing the theology and society specialization must be affiliated with the Trinity Fellows program and must opt for academic Plan B. They are required to complete the 18 credit hours of core course work as listed above, 12 credit hours of elective course work in any area or areas of specialization, and a non-credit master's essay. Up to 6 credit hours of non-theology course work completed in conjunction with the Trinity Fellows program may be applied to the student's elective course work requirement.

<table>
<thead>
<tr>
<th>Required Course Work</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective Course Work (any area or areas of specialization, including approved non-theology courses)</td>
<td>12</td>
</tr>
<tr>
<td>Master's Essay</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Master of Arts in Christian Doctrine (M.A.C.D.) Requirements

Students must complete 30 credit hours of course work and produce a comprehensive paper. The following program description summarizes those requirements. Additional information may be found in the Department of Theology's Policies and Procedures (https://www.marquette.edu/theology/policies-and-procedures.php).

Course Requirements

Required Core courses:

| THEO 6110 | Old Testament Method | 3 |
| THEO 6120 | New Testament Method | 3 |
| THEO 6210 | Origen to Late Medieval | 3 |
| THEO 6220 | Late Medieval to Early Modern | 3 |
| THEO 6320 | Christian Doctrine 1 | 3 |
| THEO 6321 | Christian Doctrine 2 | 3 |
| THEO 6410 | Introduction to Theological Ethics | 3 |
| **Elective course work** | **9** |
| **Total Credit Hours** | **30** |
In addition to the 21 credit hours of required course work, students must complete 9 credit hours of elective course work, choosing one 3-credit course in each of the department's three principal academic areas: Judaism and Christianity in antiquity, historical theology, and systematic theology/theological ethics.

**Elective courses include:**

All THEO courses numbered in the 5000 and 5100 ranges (Judaism and Christianity in Antiquity)

All THEO courses numbered in the 5200 range (Historical Theology)

All THEO courses numbered in the 5300, 5400 and 5500 ranges (Systematic Theology/Theological Ethics)

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>THEO 6130</td>
<td>The Gospels (Judaism and Christianity in Antiquity)</td>
<td>3</td>
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<td>Introduction to Systematic Theology (Systematic Theology/Theological Ethics)</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6330</td>
<td>Christian Spirituality (Systematic Theology/Theological Ethics)</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6415</td>
<td>Catholic Social Encyclical Tradition (Systematic Theology/Theological Ethics)</td>
<td>3</td>
</tr>
</tbody>
</table>

In certain circumstances and with the express permission of the M.A.C.D. program director, students may complete their elective requirements by completing the following doctoral-level courses:

All THEO courses numbered in the 8000, 8100, 8200, and 8300 ranges (Judaism and Christianity in Antiquity)

All THEO courses numbered in the 8400 range (Historical Theology)

All THEO courses numbered in the 8500 and 8600 ranges (Systematic Theology/Theological Ethics)

**Comprehensive paper**

Each student must write a comprehensive final paper presenting an original examination of a topic of interest to the student and employ one or more methods of theological inquiry. The paper should integrate lessons learned in the program and applying those lessons to the student's personal and/or professional experiences, or, alternatively, the student's personal and/or career ambitions.

**Doctor of Philosophy (Ph.D.) in Religious Studies Requirements**

**Specializations:** Judaism and Christianity in Antiquity, Historical Theology, Systematic Theology, Theological Ethics, Theology and Society (includes Health Care Mission and Ethics)

Students must complete 60 credit hours of post-baccalaureate course work, up to 30 of which may be completed prior to their enrollment in the program, demonstrate proficiency in a classical language or languages relevant to their specializations, demonstrate proficiency in two modern languages other than English, pass a doctoral qualifying examination, complete 12 credit hours of dissertation research and produce and successfully defend a doctoral dissertation. The following program description summarizes those requirements. Additional information may be found in the Department of Theology's Policies and Procedures (https://www.marquette.edu/theology/policies-and-procedures.php).

**COURSE WORK REQUIREMENTS**

Upon enrollment in the program, students chooses a specialization. The students' choice of specialization dictates the terms of the course of study. The department's principal areas of specialization are as follows:

- Judaism and Christianity in Antiquity (JUCA)
- Historical Theology (HITH)
- Systematic Theology (SYTH)
- Theological Ethics (THET)

Students choosing one of these specializations must complete 36 credit hours of course work in an area of specialization and typically completes 12 credit hours of course work in each of the two areas not chosen as the specialization. Note that the systematic theology and theological ethics areas are counted as a one for the purpose of course work distribution.

Students may choose from the following courses:

All THEO courses numbered in the 8000, 8100, 8200, and 8300 ranges (JUCA)

All THEO courses numbered in the 8400 range (HITH)

All THEO courses numbered in the 8500 range (SYTH)

All THEO courses numbered in the 8600 range (THET)

The department also offers an interdisciplinary specialization with two program options:

- Theology and Society (THSO)
Students choosing the theology and society specialization must complete at least 30 credit hours of course work in one of the Department of Theology’s principal areas of specialization, at least 9 credit hours of course work in each of the department’s other two principal areas of specialization, and 12 credit hours of graduate course work in one or more disciplines pertaining to their specific research agenda (e.g., economics, education, history, philosophy, political science or psychology).

- Health Care Mission and Ethics

Students choosing the health care mission and ethics option must complete at least 30 credit hours of course work in one of the Department of Theology’s principal areas of specialization, at least 9 credit hours in each of the department’s other two principal areas of specialization, and 12 credit hours of graduate course work pertaining to healthcare. (e.g., NURS 6007 Ethics, Policy and Health Care Advocacy, NURS 6009 Organizational and Systems Leadership, HEAL 6841 Health Care Finance, HEAL 6846 Health Care Informatics, HEAL 6848 Health Care Policy, LAW 7156 Current Issues in Health Law, LAW 7181 Elder Law, LAW 7221 Health Law).

Students choosing the interdisciplinary specialization may be required to take additional course work beyond the program’s 60-credit-hour minimum to certify their qualifications in both theology and the allied disciplines of their choosing.

FOREIGN LANGUAGE REQUIREMENTS

Students choosing the Judaism and Christianity in antiquity specialization must demonstrate proficiency in classical Hebrew and Greek. Students choosing the historical theology specialization must demonstrate proficiency in Latin, Greek or another classical language essential to their research agenda. Students choosing the systematic theology or theological ethics specialization or the health care mission and ethics interdisciplinary program option must demonstrate proficiency in Latin. Students choosing the theology and society interdisciplinary program option is not required to demonstrate proficiency in a classical language.

All students must demonstrate proficiency in German, French or another modern language or languages other than English essential to the students’ research agenda. Students are expected to demonstrate proficiency in one modern foreign language by the end of the first year of enrollment in the program and in two modern foreign languages by the end of the second year. Students typically fulfill these requirements by earning a grade of B or above in course work or on a language examination administered by the Department of (https://www.marquette.edu/languages-literatures-cultures/Languages, Literatures and Cultures (https://www.marquette.edu/languages-literatures-cultures/).

DOCTORAL QUALIFYING EXAMINATION

Once students has fulfill all of the language requirements and no earlier than their final term completing course work, they are eligible to take the doctoral qualifying examination. The examination has two stages, namely the written examination and the oral examination. The written examination is in four parts, each three hours in duration, and is administered in two sessions, typically on consecutive days. Students complete two of the examination's parts during each session. The oral examination is administered following the administration of the written examination in a single session lasting approximately 90 minutes.

The doctoral qualifying examination is administered by a committee consisting of five of the department’s full-time, tenured or tenure-track faculty members selected by the student and approved by the department’s Graduate Committee. Students choosing the interdisciplinary specialization typically substitute one of the department’s faculty committee members with a comparably credentialed faculty member in another department and/or institution. Each committee member examines the students on a topic or topics corresponding with their area of academic expertise. Students must earn the satisfactory evaluation of each of the five committee members to pass the examination. Students advances to doctoral candidacy once they pass the doctoral qualifying examination, completes their course work requirements, and fulfills all of their language requirements.

Doctoral Dissertation Credits

Upon advancing to doctoral candidacy, students must complete 12 credit hours of dissertation research. All dissertation credit hours must be completed before students schedule their dissertation defense.

Doctoral Dissertation

Students are encouraged to identify a dissertation topic and prospective director toward the end of the completion of the course work and/or while preparing for the doctoral qualifying examination. Students must choose a topic that falls within the scope of the department’s common understanding of the discipline of Religious Studies and for which students can locate a member of the department’s faculty possessing the competence and interest needed to serve as the dissertation’s director.

Once students have determined a topic of research and secured the agreement of a director, they submit a doctoral dissertation outline to the department’s Graduate Committee. The outline identifies the dissertation’s director and no fewer than three more of the department’s full-time, tenured or tenure-track faculty members to serve on the dissertation’s review board. Students choosing the interdisciplinary specialization typically substitute one of the department’s faculty board members with a comparably credentialed faculty member in another department and/or institution.

Once the Graduate Committee approves the students’ doctoral dissertation outline, inclusive of the director and review board, students produce the dissertation to the satisfaction of their director. Upon its completion and the concurrent recommendation of the director, the dissertation is subjected to the board’s review during a public defense lasting approximately two hours. Students must earn the satisfactory evaluation of each board member to secure the dissertation’s approval.
Following the successful defense of the dissertation, students may be given a fixed amount of time to revise their work in light of the board's feedback. Students submit the final edition of the dissertation to the Graduate School in advance of their graduation.

Courses

THEO 5000. Digging the Bible: Archeology and Biblical Studies. 3 cr. hrs.
An exploration of the uses and abuses of archeology relative to the field of biblical studies. Case studies in a historical approach to the intersection of archeology and biblical theology.

THEO 5020. The Bible in the Jewish Community. 3 cr. hrs.
The uses of the Bible in Jewish life and practice, in synagogue and in private use. Haggadah and Halakah.

THEO 5030. Women in the Bible. 3 cr. hrs.
Status and roles of women in selected biblical texts. Social and historical background with emphasis on narrative technique and theological themes.

THEO 5190. Studies in Biblical Theology. 3 cr. hrs.

THEO 5200. Theology in the Early Church. 3 cr. hrs.
Basic theological questions and developments during the era of the Church Fathers.

THEO 5210. History and Theology of the Christian East. 3 cr. hrs.
The Christian East from its origins, through the conversion of Constantine, to the present-day Eastern Orthodox and Oriental Orthodox Churches. Particular attention to the distinctive theological emphases of the East, as well as to the developments leading to the break in communion between Catholic (and Protestant) West and Orthodox East.

A study of Augustine's life, writings and thought, with special attention to the Confessions, to his theology of the church and the sacraments, and to his teaching on grace and predestination, against the background of his early philosophical writings.

THEO 5230. Theology in the Middle Ages. 3 cr. hrs.
Basic theological questions and developments during the Middle Ages, from the Carolingians to the 14th century.

THEO 5240. Theology in the Reformation Era. 3 cr. hrs.
Basic theological questions and developments during the late Middle Ages and early Reformation. Also addresses current ecumenical issues.

THEO 5250. Martin Luther. 3 cr. hrs.
The thought and world of Luther, with emphasis on Luther in his Catholic context; Luther and the Bible, Augustine, the Radicals, the Pope; Luther's theology of faith and freedom; contextual, theological and ethical.

THEO 5260. Theology in America. 3 cr. hrs.
Basic theological questions and developments from Puritanism to the present.

THEO 5270. The Many Faces of U.S. Catholicism. 3 cr. hrs.
Investigates the development of diverse manifestations of U.S. Catholic life and thought. Explores how historical and contemporary experiences, including slavery, migration, sexism and other forms of historical exclusion, contribute to the shaping of theologies and practices that are uniquely American and distinctly Catholic.

THEO 5290. Studies in Historical Theology. 3 cr. hrs.
Significant figures and themes in the history of religious thought, examined in their historical context and contemporary significance. Topics and periods vary.

THEO 5300. The Question of God in a Secular Age. 3 cr. hrs.
Origins and varieties of contemporary atheism. The existence of God and Christian theistic interpretations.

THEO 5310. Theology of the Holy Spirit. 3 cr. hrs.

THEO 5320. Jesus the Christ. 3 cr. hrs.

THEO 5330. Theology of the Church. 3 cr. hrs.
The Church in light of the documents, events, and charism of Vatican II. Contemporary understandings of the Church and its mission in the modern world. Special attention to post-conciliar 'communion ecclesiology' and the relation of the local to the universal Church.

THEO 5340. Sacraments and Christian Life. 3 cr. hrs.
Theological overview of the major sacramental enactments of the church's life in Christ. The witness of Scripture and Tradition, including the liturgy itself. Ethical and ecumenical dimensions.
THEO 5350. The Eucharist. 3 cr. hrs.
Biblical origins and historical evolution of the Eucharist in light of contemporary theology and ritual theory, with special focus on the Roman Rite Catholic post-Vatican II celebration.

THEO 5370. Protestant Thought and Practice. 3 cr. hrs.
Major perspectives within the broad spectrum of Protestantism. Examination of the thought of several Protestant theologians. A survey of the unity and diversity of several Protestant denominations and their respective forms of worship.

THEO 5390. Studies in Systematic Theology. 3 cr. hrs.
Significant movements and/or major figures in contemporary systematic theology. Their historical antecedents and cultural context. Specific topics to be specified in the Schedule of Classes.

THEO 5400. Christian Faith and Justice. 3 cr. hrs.
Classic and recent Christian understandings of justice as interpersonal and societal right-relations. Justice as constitutive aspect of the Gospel; love and justice; Christian responsibility in the face of injustice. Further issues, e.g. sexual and gender ethics, political and economic issues.

THEO 5405. Christian Theology in Global Contexts. 3 cr. hrs.
The reception of the Christian gospel in diverse cultures throughout the world. The challenge of inculturation and the requirements of the unity of Christian faith. The meaning of mission and evangelization outside the West. The encounter with indigenous religions.

THEO 5410. Family, Church, and Society. 3 cr. hrs.
The interaction of family, church, and society. Contemporary family patterns, their strengths and stresses; the teachings, reflection, and pastoral responses of the Church concerning marriage and family. Ecclesial and societal implications of family as ‘domestic church’.

THEO 5430. Religion and Science. 3 cr. hrs.
Theological analysis of the historical relationship between religion and the natural sciences; exploration of models for relating the two disciplines today; reflection on the theological implications of contemporary scientific discoveries and theories.

THEO 5440. Foundations of Ecological Ethics. 3 cr. hrs.
Exploration of religious foundations for ecological ethics, with a focus on the Catholic tradition and social teachings; application to contemporary ecological problems.

THEO 5450. Medical Ethics. 3 cr. hrs.
Health care practices under moral assessment from within the Christian tradition. Controversial topics facing medicine (issues of the beginning and end of life, assisted reproduction, etc.) as related to Christian moral principles.

THEO 5490. Studies in Moral Theology. 3 cr. hrs.
Selected issues in contemporary moral life; selected themes from classical and contemporary writings in moral theology and Christian ethics. Topics vary, as specified in the Schedule of Classes.

THEO 5500. Christ and World Religions: Theology of Interreligious Dialogue. 3 cr. hrs.
Global pluralism of religions considered from perspectives of Christian faith. Methods and case studies of theological dialogue with particular religious traditions, e.g. Judaism, Islam, Hinduism, Buddhism.

THEO 5510. Survey of World Religions. 3 cr. hrs.
An overview of the major religious traditions of the world: Hinduism, Buddhism, religions of China and Japan, Judaism, Christianity and Islam.

THEO 5520. Jewish Thought and Practice. 3 cr. hrs.
Meaning of Jewish history. Philosophical and social understanding of the Jewish experience. Ruling ideas, myths, symbols, and rites. Partially funded by the Jewish Chautauqua Society.

THEO 5530. Islam: Faith and Practice. 3 cr. hrs.

THEO 5540. Hinduism, Yoga, and Buddhism. 3 cr. hrs.
Religious experience, cultic act, religious organization, theological formulation, as illustrated by two religions of India, Hinduism and Buddhism. Yoga as spiritual discipline. Historical approach. Readings from sacred writings.

THEO 6110. Old Testament Method. 3 cr. hrs.
Introduction to the history, literature, and religion of ancient Israel. History and methods of interpretation. Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.

Background, geography, text, language, versions, editions. Principal problems in individual books. Exegetical techniques. Hermeneutical principles. Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.

THEO 6130. The Gospels. 3 cr. hrs.
Formation, structure, and styles of the four canonical Gospels. Topics to be studied include: their sources, literary relationships, depictions of Jesus, role of the Church, discipleship, and suffering. Each Gospel will be studied in terms of the communities that produced them and their relationship to other texts. Exegesis of selected texts. Prereq: THEO-MA or THEO-MACD student.
THEO 6210. Origen to Late Medieval. 3 cr. hrs.
A brief introduction to historiography and historical method with a more focused introduction to major theological issues and debates (e.g., scripture and tradition; trinity; Christology; grace and sacraments; faith and reason; church and state) and to some of the key contributions of major eastern and western theologians (e.g., Origen, Augustine, Pseudo-Dionysius, John of Damascus, Anselm, Abelard, Gregory Palamas, Aquinas, Bonaventure, Scotus). Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.; required for all master's candidates.

THEO 6220. Late Medieval to Early Modern. 3 cr. hrs.
A basic introduction to theological developments from 1350 to the end of the Enlightenment (1800). Examines major theological movements and the thought of major thinkers (e.g., Ockham, Biel, Erasmus, Luther, Calvin, Bellarmine, Bossuet, Pascal, Spener, Edwards, Lessing, Kant) within their social, historical, and philosophical contexts. Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.; required for all master's candidates.

THEO 6310. Introduction to Systematic Theology. 3 cr. hrs.
Relation of systematic theology to faith, revelation (the Bible, Church creeds and doctrines), and the Church. The role of biblical exegesis, historical scholarship, philosophy, natural and human sciences in systematic theology. Derivation of various categories, subdivisions, and methods of systematic theology. The challenges and prospects of interconfessional and interreligious dialogue for systematic theology. Prereq: THEO-MA student or cons. of dept. ch.

THEO 6320. Christian Doctrine 1. 3 cr. hrs.
A historical and theological introduction to the formation and development of the Christian doctrines of the Trinity, Christology, and Pneumatology. Focuses on the interrelationships of these doctrines. Prereq: THEO-MACD student.

THEO 6321. Christian Doctrine 2. 3 cr. hrs.
A historical and theological introduction to the Christian doctrines of Church, sacraments, and eschatology. Focuses on the interrelationships of these doctrines with one another and with those in Christian Doctrine 1. Prereq: THEO-MACD student.

THEO 6330. Christian Spirituality. 3 cr. hrs.
Explores the theological foundations of and key concepts, texts and figures in the field of Christian spirituality. Focuses on the relationship between theory and practice in historical and contemporary contexts. Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.

THEO 6410. Introduction to Theological Ethics. 3 cr. hrs.
Systematic survey of the fundamental categories, concepts and norms used in moral theology to analyze human moral experience. The role of Scripture and tradition as foundational sources in moral theology. The church as the locus for Christian moral reflection. Pivotal issues in the historical development of moral theology. The relation of moral philosophy to moral theology. Required for master's core curriculum. Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.

THEO 6415. Catholic Social Encyclical Tradition. 3 cr. hrs.
Explores the following principles of Catholic Social teaching: the dignity of persons in community and the common good; the duties of the state and the principle of subsidiarity; kinds of justice and their application in social, political and economic life; the relationship between labor and capital; Church-state relationships; war and peace; and environmental stewardship. The issues are traced through the documents of Vatican II and selected Apostolic Exhortations. Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.

THEO 6995. Independent Study in Theology. 1-3 cr. hrs.
Prereq: Cons. of dept. ch.

THEO 6998. Professional Project in Theology. 0 cr. hrs.
SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

THEO 8010. Intensive Hebrew Grammar. 3 cr. hrs.
Introduction to Biblical Hebrew. Emphasis will be placed on grammar, verb syntax, and vocabulary acquisition. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8011. Advanced Hebrew. 3 cr. hrs.
Reading of selected narrative and poetic books. Advanced grammar. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8012. Aramaic Dialects. 3 cr. hrs.
Provides the student who already has a background in Biblical Hebrew with a survey of Aramaic dialects, ranging from Ancient Aramaic to Syriac. Includes biblical Aramaic and Qumran Aramaic. Emphasis on providing the student with the tools to use these dialects in other biblical courses. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8120. Sources of Pentateuchal Thought. 3 cr. hrs.
Detailed study of the first five books of the Old Testament. Exegesis of selected passages. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8121. Prophetic Books of Ancient Israel. 3 cr. hrs.
Key themes in the prophetic movement. Relation of the prophets to the cult, society, and history of ancient Israel. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8122. Psalms and Religion of Ancient Israel. 3 cr. hrs.
A study of the literary, theological, and historical dimensions of the book of Psalms. Relationship between the psalms and cultic life. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8123. Former Prophets: Historical Books. 3 cr. hrs.

THEO 8124. Wisdom Books of Ancient Israel. 3 cr. hrs.
Study of the place of Wisdom Literature in the development of Hebrew thought. Exegesis of selected passages. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8125. Intertestamental Literature. 3 cr. hrs.
Study of the books of the Old Testament Apocrypha and Pseudepigrapha. Other developments of the period. Exegesis of selected passages. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8126. Judaism in the Hellenistic Era. 3 cr. hrs.
Jewish history, institutions, movements, and writings of this period, including Qumran, as they pertain to biblical studies. Jewish interpretation of scripture; midrash; haggadah and halakah; targums; Hellenistic influences on Judaism in Palestine and the diaspora; other related topics. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8127. The Writings. 3 cr. hrs.
An investigation into some of the other books of the Hebrew Bible beyond Torah and Prophets. May include literary, theological, and historical elements of 'The Five Scrolls,' Daniel, Ezra-Nehemiah, 1 and 2 Chronicles. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8130. Qumran and the Dead Sea Scrolls. 3 cr. hrs.
Overview of the Dead Sea Scrolls and the Qumran community. Covers major texts, contexts and interpretive issues in Qumran research, as well as their application to contemporary critical scholarship on the Hebrew Scriptures, the New Testament, early Judaism and early Christianity. Prereq: Admitted to REST-Ph.D. program or cons. of dept. ch.

THEO 8150. Special Questions in Old Testament Studies. 3 cr. hrs.
Specialized research on topics or problems within and/or related to the Old Testament writings. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8210. Intensive Hellenistic Greek Grammar. 3 cr. hrs.
An introduction to the Greek of the Hellenistic era, including the New Testament. Emphasis on grammar, syntax, vocabulary acquisition and historical context and theology. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8211. Advanced Hellenistic Greek. 3 cr. hrs.
Advanced grammar; readings in texts from 300 B.C. to 300 A.D. Emphasis on the language of the New Testament as reflective of continuity and change in Greek vocabulary, morphology, syntax, style, and the historical context and theology of these texts. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8310. Hellenistic Backgrounds to the New Testament. 3 cr. hrs.
Introduction to various Graeco-Roman issues and movements which influenced the development of New Testament writings. Study of traditional religion, mystery cults, philosophical schools, astrology and magic, literary genres and tendencies, and other related topics. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8311. Apocalyptic Literature. 3 cr. hrs.
Origin and development of prophetic and apocalyptic eschatology. The social and religious phenomenon of apocalypticism. The genre 'apocalypse' in Jewish and early Christian tradition. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8312. Formation of the Gospel Tradition. 3 cr. hrs.

THEO 8313. Matthew. 3 cr. hrs.
Formation, structure, and style of the Gospel of Matthew. Redactional and literary analysis of the Gospel to reconstruct the theology and the situation which produced it. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8314. Mark. 3 cr. hrs.
Formation, structure, and style of the Gospel of Mark. Redactional and literary analysis of the Gospel to reconstruct the theology and the situation which produced it. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

Formation, structure, and style of Luke-Acts. Redactional and literary analysis of these two volumes to reconstruct the theology and the situation which produced them. Questions of Christian origins. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8316. The Johannine Tradition. 3 cr. hrs.
Formation, structure, and style of the Gospel of John. Source, redaction, and literary analysis to reconstruct the stages of formation and their corresponding theologies. Relation of the Johannine letters to the Gospel. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8317. Letter to the Romans. 3 cr. hrs.
Background and purpose of this letter. Examination of important Pauline themes, issues, and methods of argumentation. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8318. The Corinthian Correspondence. 3 cr. hrs.
Study of I and/or II Corinthians in the context of Paul's pastoral relationship to Corinth. Integrity, background and purpose of the letters. Examination of important themes, issues, and methods of argumentation. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8319. Shorter Pauline Letters. 3 cr. hrs.
Study of one or more of the following letters: Galatians, Philippians, I and II Thessalonians, and Philemon. Background and purpose of these writings. Examination of important Pauline themes, issues, and methods of argumentation. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8320. Colossians and Ephesians. 3 cr. hrs.
Authorship, milieu, and purpose of these letters. Their relationship to one another and to other Pauline traditions. Review of critical issues and examination of theological themes and methods of argumentation. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8321. Later New Testament Writings. 3 cr. hrs.
Study of one or more of the following New Testament texts: I and II Timothy; Titus; Hebrews; James; I and II Peter; I, II, and III John; Jude; and Revelation 1-3. Background, purpose, and theology of these writings. Exegesis of key passages. Relationship of these works to selected non-canonical writings. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

Specialized research on topics or problems within and/or related to the New Testament writings. Greek text used. Prereq: REST-PhD student or THEO 6120 and cons. of dept. ch.

THEO 8410. Ecclesiastical Historiography. 3 cr. hrs.
The interpretation of the history of the Church and of doctrine as seen by ecclesiastical historians from Eusebius to Harnack; their characteristic approaches and concerns. Recent trends in historiography and historical theology. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8411. History of Christian Thought 1: The Age of the Fathers. 3 cr. hrs.
A study of the development of Christian beliefs and doctrines in the patristic age. The following themes are treated: the authority of Scripture and tradition; Father, Word, Spirit, and the divine Triad; the person of Jesus the Christ; sin, redemption and grace; the Church and the sacraments. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8412. History of Christian Thought 2: Byzantine Tradition. 3 cr. hrs.
Survey of Greek theology from Nicea (325 A.D.) to the fall of Constantinople (1453). Particular attention to the most important writers following the Council of Chalcedon, beginning with Dionysius Areopagita and concluding with Gregory Palamas and Nicholas Cabasilas. Focus on the abiding Greek preoccupation with salvation as deification and its contribution to the continuity of Eastern Christian thought. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8413. History of Christian Thought 3: The Middle Ages. 3 cr. hrs.
A study of the development of Christian theology from Augustine to Thomas Aquinas. Includes the following themes: the character and method of theology after Augustine; monastic theology; the early Eucharistic controversies; reason, logic, and the origins of Scholasticism; 12th century humanism and theology; Scholasticism; and Thomism. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8414. History of Christian Thought 4: The Later Middle Ages and the Reformation. 3 cr. hrs.

THEO 8415. History of Christian Thought 5: The Modern Era. 3 cr. hrs.

THEO 8416. History of Christian Thought 6: Theology in America. 3 cr. hrs.
An analysis of developments in American theology from Puritanism to the present. Examines representative theologians of Puritanism, revivalism, enlightenment, progressive orthodoxy, and neo-orthodoxy within the context of American political and social movements. Themes considered: the church, grace, religious liberty, church and state, voluntarism, person of Jesus, tradition, adaptation. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8417. The Apostolic Fathers and the Apologists. 3 cr. hrs.
A study of the Christian writings of the 2nd century, especially Clement of Rome, Ignatius of Antioch, the Epistle of Barnabas, the Didache, the Greek apologists, and Irenaeus, with particular attention to their relation to the Old and New Testaments, the doctrine of the Logos, Church order, and the emerging understanding of orthodoxy and heresy. Prereq: REST-PhD student or cons. of dept. ch.; may not be taken for credit by students who have taken the same course as THEO 8415.
THEO 8418. Clement, Origen and the Alexandrian Tradition. 3 cr. hrs.
Against the background of Clement's attempt to incorporate Greek modes of thought into Christianity, an extensive study of Origen as a biblical
commentator and the first systematic theologian, with some consideration of the neoplatonic tradition in Christianity, Origen's influence on later theology,
and the Origenist controversies. Prereq: REST-PhD student or cons. of dept. ch.; may not be taken for credit by students who have taken the same
course as THEO 8417.

THEO 8419. The Greek Fathers of the Fourth Century. 3 cr. hrs.
Reading and study of some of the writings of Athanasius, Basil the Great, Gregory of Nazianzus, Gregory of Nyssa and others, with attention given to
the Trinitarian controversies of the 4th century, the councils of Nicea and Constantinople, and the rise and fall of Arianism. Prereq: REST-PhD student or cons.
of dept. ch.; may not be taken for credit by students who have taken the same course as THEO 8418.

THEO 8420. History and Theology of the New Testament Canon. 3 cr. hrs.
The Septuagint as the first Christian Bible; authority for religious truth in the Apostolic Fathers and the Apologists; evidence for the liturgical use
of Christian writings; the apocryphal New Testament; the canon of four gospels; the collection of the Apostles' letters; lists of canonical books; the
beginnings of exegesis; modern theological speculation on the canon. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8421. Augustine of Hippo. 3 cr. hrs.
An intensive study of Augustine's life, writings and thought. Topics include: the influence of neoplatonism on Augustine, the stages of his conversion, the
implications of the Donatist controversy for his views on the Church and the sacraments, and the controversy with Pelagius on grace and predestination.
Prereq: REST-PhD student or cons. of dept. ch.

THEO 8422. Monastic Theology. 3 cr. hrs.
Proposes a reading of the classical 'canon' of early monastic literature. Beginning with a few sessions devoted to sources, the course moves to the
early Syrians, notably Aphrahat of Persia and Ephrem Syrus, and then to the better-known and enormously influential 'Vita Antonii,' the several 'Vitae'
of Pachomius, the 'History of the Monks of Egypt,' Basil the Great's 'Longer and Shorter Rules,' Gregory of Nyssa, Evagrius of Pontus, the 'Macarian
Homilies,' such early 5th century works as Palladius of Hierapolis' 'Lausiac History,' John Cassian's 'Institutes' and 'Conferences,' Theodoret of Cyprus'
'Historia religiosa,' and the 'Sayings of the Desert Fathers.' Concludes with an examination of Benedict of Nursia's 'Life' (by Gregory the Great) and
'Rerule.' Prereq: REST-PhD student or cons. of dept. ch.

THEO 8423. Theology in the Twelfth Century. 3 cr. hrs.
Survey of theology in monasteries and cathedral schools, from the Gregorian Reform to Alan of Lille, including: e.g., Anselm of Canterbury, Peter
Abelard, Bernard of Clairvaux, the Victorines, Peter Lombard. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8424. The Theology of Thomas Aquinas. 3 cr. hrs.
The critical reading of the texts of Aquinas in developmental sequence with emphasis on the character of the Summa theologicae. Prereq: REST-PhD
student or cons. of dept. ch.

THEO 8425. The Theology of Bonaventure. 3 cr. hrs.
Readings and study of both the academic and the mystical writings of Bonaventure, with special emphasis on the Breviloquium. Prereq: REST-PhD
student or cons. of dept. ch.

THEO 8426. The Study of the Bible in the Middle Ages. 3 cr. hrs.
Medieval exegesis from the Carolingian renaissance to the 13th century, with special attention to the relationship between scripture commentaries
and systematic theologies; the multiple senses of Scripture in theory and practice; authors include: e.g., Rupert of Deutz, Bernard of Clairvaux, the
Victorines, Aquinas and his teachers. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8427. Late Medieval Augustinianism. 3 cr. hrs.
Revival of Augustinian thought. Wyclif, Hus to Bradwardine. Via Gregorii. Commentaries on St. Augustine. Anti-Pelagianism and Donatism. Mediation of
Augustinian thought to subsequent periods. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8428. Interpretation of the Bible in the Renaissance and Reformation. 3 cr. hrs.
Hermeneutical developments from the Victorines. Sources and methods for interpreting historical exegesis. Humanist work on Scripture. The place of
the Bible in theology. Luther as doctor of Scripture. Trent and Bible study. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8429. Erasmus. 3 cr. hrs.
Biography and developments of his thought. Study of Scripture and the classics. Commentaries on Scripture. Philosophia Christi. Changing attitudes
ward Erasmus. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8430. Luther. 3 cr. hrs.
Developments of Luther's thought in relation to medieval theology. Influence of nominalism and mysticism on Luther. Origins of his hermeneutic and
discourse of justification. Importance of his theology of reformation, law/gospel, and man. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8431. Calvin. 3 cr. hrs.
Biography and development of his major writings. Systematic construction of the Institutes of the Christian Religion. Calvin on Scripture, sanctification
and predestination, and early results in Calvinism. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8432. Council of Trent. 3 cr. hrs.
The positive contribution of Trent to the history of Christian thought. The 'medieval' and 'modern' character of the council. Trent's understanding of the
reformers, and the question of 'Counter-Reformation.' Trent's position on Scripture and tradition, and its justification. Prereq: REST-PhD student or cons.
of dept. ch.
THEO 8433. Theological Thought of the Enlightenment and the Nineteenth Century. 3 cr. hrs.
Important theological developments, including movements and thinkers, in both the Catholic and Protestant traditions, in both Europe and America from the beginning of the Modern Era. Possible movements to be covered in this order: Deism, Rational Supernaturalism, Pietism, Romanticism, Speculative Idealism, French Catholic Thought (Traditionalism, Fideism), Oxford Movement, Tubingen School, Protestant Liberalism, Biblical Criticism and Darwinism, Ultramontanism and Neo-Thomism, Roman Catholic Thought and Modernism, Existentialism, and Atheism. Possible figures covered: Herbert of Cherbury, Tillotson, Locke, Toland, Tindal, Voltaire, Wolff, Semler, Reimarus, Lessing, Rousseau, Butler, Hume, Kant, Jacobi, Hamann, Herder, Coleridge, Schleiermacher, Busnelli, Hegel, F. C. Baur, Biedermann, John and Edward Caird, Chateaubriand, Maistre, Lamennais, Bautain, Kebler, Newman, Williams, Pusey, Drey, Mohler, Strauss, Feuerbach, Marx, Williams, Goodwin, Jowett, Darwin, Moore, Hodge, Abbott, Ritschl, Herrmann, Harnack, Rauschenbusch, Hodge, Warfield, Leo XIII, Mercier, Garrigou-Lagrange, Olle-Laprune, Blondel, Laberthonniere, Loisy, Le Roy, Tyrrell, Kierkegaard, Nietzsche. Not all significant movements and thinkers are covered in one term. Prereq: THEO 6210, THEO 6220, and THEO 6310, or their equiv.’s (i.e., the master’s-level introductory courses), unless the student has passed out of this material on the M.A. Exam.

THEO 8434. Schleiermacher. 3 cr. hrs.
A close reading of the most important theological works of F.D.E. Schleiermacher (1768-1834), the ‘father of modern theology,’ with a view to understanding the basic concepts and historical development of Schleiermacher’s thought within the context of post-Enlightenment European philosophical-theological ideas and movements. Prereq: THEO 6210 and THEO 6220, or their equiv.’s (i.e., the master’s-level introductory courses) on the history of theology, unless the student has passed out of this material on the M.A. Exam.

THEO 8435. Images of the Church through the Ages. 3 cr. hrs.
Covers the historical journey of the Christian church as it began and developed through its leading images/symbols/models. Prereq: THEO 6210, THEO 6220, and THEO 6310, or equiv.’s (i.e., the master’s-level introductory courses), unless the student has passed out of this material on the M.A. Exam.

THEO 8436. The Roman Catholic Modernist Crisis. 3 cr. hrs.
Modernist controversies as the explosion of tensions long building between liberalism and orthodoxy, immanentist and extrinsicist religious thought, and tradition and critical history before and after 1900. An interpretation of the episodes in Roman Catholic theology (concerning Loisy, Blondel, von Hugel, Tyrrell) that formed the backdrop to the generation of Vatican II. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8437. Theology of Jonathan Edwards. 3 cr. hrs.
Examines Edwards’ major theological works and analyzes his chief contributions to American theology. Particular focus on Edwards’ understanding of God, original sin, the atonement, freedom, religious experience, true virtue, providence, and the millennium. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8438. Theology in the American Enlightenment. 3 cr. hrs.
Examines how the Enlightenment influenced Christian thought in the United States between 1700 and 1830, paying special attention to the issues raised by critical reason relative to the understanding of revelation, Christ, the supernatural, church and state, and Christians; e.g., the Unitarian W.E. Channing, the Princetonian Presbyterian C. Hodge, and the Catholic J. England. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8439. Theology and Romanticism in the United States. 3 cr. hrs.
Examines representative American Protestant and Catholic theologies that were most directly influenced by Romanticism; e.g., the Transcendentalism of R. W. Emerson and T. Parker, the Progressive Orthodoxy of H. Bushnell, the Mergusby Theology of W. Nevin and P. Schaaff, the Ontologism and moderate traditionalism of O. Brownson and I. Hecker, the Confessionalism of C. P. Krauth. Concentration upon the roles these theologians assigned to revelation, divine immanence in history, church and society, religious intuition, ecclesiastical and confessional authority. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8440. American Catholic Theology. 3 cr. hrs.
A historical examination of the theologies of American Catholics from John Carroll to John Courtney Murray. Analysis of major pastoral and systematic theologians (e.g., John England, Francis P. Kenrick, Orestes Brownson, Isaac Hecker, John Ireland, John A. Ryan, Gustave Weigel) within the context of American and European theological developments. Examination of American Catholic perceptions of Christology, grace, ecclesiology, church-state relations, social thought, the Bible, and modern sciences with a focus upon the relationship of religion and republicanism. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8441. The Social Gospel in American Theologies. 3 cr. hrs.
Examinations of the social thought of representative American Protestants and Catholics of the late 19th and early 20th centuries, concentrating upon the various perceptions of Christianity’s relationship to the social and economic problems of the day. Analysis of the works of Washington Gladden, Richard Eliy, Josiah Strong, Walter Rauschenbusch, Edward McGlynn, John A. Ryan, Paul H. Fursey, Dorothy Day, and Virgil Michel. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8442. Dionysius the Areopagite: Father of Mysticism?. 3 cr. hrs.
Intended to be primarily a close reading of (Pseudo-) Dionysius the Areopagite (ca. 500), whose small corpus of works profoundly influenced subsequent Christian thought. Analyzes his background, his treatises and ‘epistles,’ noting his sources and parallels in preceding and contemporary Christian, pagan Neoplatonist, and Jewish mystical literature. Also traces out the Dionysian ‘trajectory’ in selected later Eastern Christian writers. Prereq: THEO 6210 and cons. of dept. ch.
THEO 8443. Symeon the New Theologian-Sources and Heirs. 3 cr. hrs.
Examines Symeon the New Theologian (949-1022), the most striking and attractive of the Byzantine spiritual writers, who too often is treated somewhat in isolation from the sources and currents which feed him. Begins with 5th century writers such as Diadochus of Photiki and Mark the Monk, runs through Dionysius, Maximus, and John of the Ladder in the 6th-7th centuries (possibly including the ‘Gaza School’ and Palestinian monasticism), and continues through Symeon, to the Hesychasts of the 14th and 15th centuries, notably Gregory of Sinai and Gregory Palamas. Prereq: THEO 6210 and cons. of dept. ch.

THEO 8444. PreNicene Ascetical and Mystical Literature. 3 cr. hrs.

THEO 8445. The Development of Roman Catholic Theology from the Enlightenment to the Present. 3 cr. hrs.
Focuses on the historical development of Roman Catholic theology from the Enlightenment to the present. Treats movements such as French Romanticism, Gallicanism, Ultramontanism, Newmanism, Modernism, New Theology and Transcendental Thomism, Vatican II and post-Vatican II developments. Treats the thought of selected Roman Catholic theologians. In the 19th century: French theologians Chateaubriand, de Maistre, Lamennais, Bautain; the Tubingen theologians (e.g., Drey, Mohler); Newman and the Oxford Movement; the New Apologetics (e.g., Blondel, Laborthonnier); the ‘Modernists’ (e.g., Loisy, Tyrrell). In the 20th century: New Theology and Transcendental Thomism (e.g., Rousselot, Marechal, de Lubac, Karl Rahner, Lonergan, Schillebeeckx); Liturgical Movement (e.g., Jungmann, Casel, Dix); Vatican II and Aggiornamento (e.g., Congar, Kung, Courtney Murray, Balthasar, Ratzinger); Political and Liberation Theologies (e.g., Metz, Gutierrez, Segundo, Leonard Boff); Feminist Theology (e.g., Schussler Fiorenza, Radford Ruether, Pilar Aquino). Prereq: THEO 6210, THEO 6220, and THEO 6310, or equiv.’s (i.e., the master’s-level introductory courses), unless the student has passed out of this material on the M.A. Exam.

THEO 8446. History of Christian Theology in the Twentieth Century. 3 cr. hrs.
Possible schools/movements and figures to be covered: Eschatological school (J. Weiss, Schweitzer), Religionsgeschichtliche Schule (Trotsch, American Empiricism and Naturalism (William James, D.C. Macintosh, Dewey, Wieman), Dialectical Theology (Barth, Brunner, Gogarten, Bonhoeffer), Christian Existentialism (Marcel, Tillich, Bultmann), Christian Realism (H.R. Niebuhr, Reinhold Niebuhr), the Nouvelle Theologie and Transcendental Thomism (Rousselot, Marechal, de Lubac, K. Rahner, Lonergan, Schillebeeckx), Vatican II and renewed Roman Catholic Theology (Congar, John XXIII, Kung, John Courtney Murray, Balthasar, Ratzinger), Political Theology and Liberation Theologies (Metz, Moltmann, Gutierrez, Segundo, L. Boff, Sobrino). Not all of these movements and figures are covered in one term. Prereq: THEO 6210, THEO 6220, and THEO 6310, or equiv.’s (i.e., the master’s-level introductory courses), unless the student has passed out of this material on the M.A. Exam.

THEO 8450. Special Questions in the History of Christian Thought:. 3 cr. hrs.
Specialized research in one area or problem in the history of Christian thought. Specific topic(s) announced. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8510. Christian Anthropology. 3 cr. hrs.
Different concepts of anthropology today. The central interest in anthropology in different fields, including philosophy and theology, in the last 50 years. The relationship between anthropology, theology, Christology. Human existence according to the Old and New Testaments. The realities of history, world, and freedom as related to meaning in human existence. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8511. Atheism and Theism. 3 cr. hrs.
Exploration of the basic theistic and atheistic options regarding the ultimate meaning and value of human life. Socio-cultural and religious roots of these options. Criteria of truth for determining validity. Examination of representative writings, classical and modern, which discuss these options. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8512. God in Contemporary Theology. 3 cr. hrs.
Nineteenth and 20th century roots (philosophical, social, and religious) of present understandings of God. Classical and contemporary discussion of the nature and validity of theistic language. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8513. The Structure of Religious Experience. 3 cr. hrs.
Analysis of the structure of religious experience and related phenomena as explored through a variety of perspectives, such as philosophy, sociology, psychology, and theology. The nature and function of religion in human life in relation to the individual and social development of the human person. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8514. Hermeneutic Theory and Theological Method. 3 cr. hrs.

THEO 8515. Philosophy as Source and Resource for Theology. 3 cr. hrs.
Critical examination of philosophical texts which have played an important role in framing theological questions and discussions; of representative theological texts for how philosophical issues and presuppositions bear on their interpretation; of representative accounts (historical and contemporary) of the relationship between theology and philosophy. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8516. The Trinity. 3 cr. hrs.
Historical and systematic presentation of the doctrine of the Trinity. The development of this doctrine in early Christian history. The notions of substance, person, procession, relation, and communion as they occur in patristic tradition and in later Scholastic theology. Other approaches to this doctrine in the light of contemporary philosophy and theology. Role of this doctrine in contemporary Christian experience. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8517. Christology. 3 cr. hrs.
Historical and systematic presentation of the doctrine of the Incarnation. Christ, the Mediator between God and humanity, as the fullness of all revelation. Christology in the New Testament. The development of the doctrine of the Incarnation in the Christian church with special attention given to the councils of Ephesus and Chalcedon, Scholastic theology, and contemporary approaches to the mystery of Jesus. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8518. Soteriology. 3 cr. hrs.
Specific redemptive function of Jesus Christ and then of the Christian community, the sacraments and the world in which one lives. Grace and human development. Salvation as a personal and societal reality; redemption of the social order. Salvation of the nonbeliever, in particular the relationship between salvation and revelation. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8519. Ecclesiology. 3 cr. hrs.

THEO 8520. Theology of Christian Liturgy. 3 cr. hrs.
A systematic study of the Church at prayer in Trinitarian and ecumenical perspectives. The Church's faith in God's saving action through its own ritual self-offering seen in light of human sciences, phenomenology and Christian doctrine. Liturgy examined as symbolic communication, as actualization of Christian community, and in its relationship to the rest of Christian life and theology. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8521. Christian Eschatology. 3 cr. hrs.
Analysis of Biblical and historical forms of Christian eschatology. Comparison of Christian perspectives with cyclic approaches to history and apocalyptic approaches to the end of history. The centrality of eternal life to the Christian message of the Kingdom of God. Resurrection as the principal locus of Christian expectations. Prereq: REST-Phd student or cons. of dept. ch.

THEO 8522. Major Figures in Modern Theology. 3 cr. hrs.
Intensive examination of the writings of a thinker who has had a significant impact on theology within the last hundred years. Focuses on the primary texts of a particular theologian or school of thought. Also assesses their contribution to theology and the life of the Church and examines critical evaluations. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8523. Doctrinal Themes in Contemporary Protestant Systematic Theology. 3 cr. hrs.
Analysis and evaluation of important contemporary Protestant systematic theologians in terms of a single theme or related set of themes to be chosen by the instructor. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8524. Doctrinal Themes in Contemporary Roman Catholic Systematic Theology. 3 cr. hrs.
Analysis and evaluation of important contemporary Roman Catholic systematic theologians in terms of a single theme or related set of themes to be chosen by the instructor. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8525. Theological Method: Interdisciplinary Implications. 3 cr. hrs.
Exploration of methodological interrelations between theology and other academic disciplines in terms of a single theme or related set of themes to be chosen by the instructor. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8526. Fundamental Themes in the Theology of Bernard Lonergan. 3 cr. hrs.
Study of major texts of Bernard Lonergan. Themes vary: grace, Trinity, Christology, method. Also considers developments by other authors. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8527. Fundamental Themes in the Theology of Karl Rahner. 3 cr. hrs.
Intensive examination of major themes and texts in Karl Rahner's writings. Focuses on the primary texts, assesses their contribution to theology and the life of the Church and examines critical evaluations. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8528. Theology of Karl Barth. 3 cr. hrs.
An examination of Karl Barth's major texts, primarily, but not exclusively, his Church Dogmatics. Themes may include his Christology, method, moral theology and/or political theology. An examination of his relation to those who came before him, those against whom he reacted, as well as those who developed his thought in the 20th and 21st century. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8529. Nouvelle Theologie. 3 cr. hrs.
A study of the theological movement of the 20th century known as 'la nouvelle théologie' or 'ressourcement' that reacted to neo-scholasticism and sought to reuniify theology through a reappraisal of the sources - the liturgy, Scriptures, and the Early Church Fathers. Representative figures include Henri de Lubac, Jean Daniélou, Henri Bouillard, Yves Congar, Louis Bouyer, Marie-Dominique Chenu, and Hans Urs von Balthasar. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8530. Theology of the Holy Spirit. 3 cr. hrs.
An examination of the biblical, historical and systematic aspects of pneumatology. Attention given to the Holy Spirit and the doctrine of the Trinity with consideration of the ecumenical implications of the Filioque, the Spirit in creation and redemption, the mission of the Holy Spirit relative to that of the Son, and the importance of pneumatology for the entire spectrum of Christian doctrine. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8531. Theology of Grace. 3 cr. hrs.
An examination of the doctrine of grace in its historical developments and in contemporary systematic theology. Attention given to the following: nature and grace, distinctions in the types and modalities of grace, grace and human freedom/predestination, justification and sanctification, grace in the church and the world. Also includes consideration of ecumenical convergences and/or divergences (Catholic and Protestant, Eastern and Western Churches). Prereq: REST-PhD student or cons. of dept. ch.

THEO 8532. Ecumenism. 3 cr. hrs.
A study of ecumenism, the efforts of the Christian churches to restore unity, ecumenical principles, the nature, goal and reception of dialogues, major Catholic encyclicals and directives on ecumenism, and significant recent ecumenical agreements between churches. An assessment of the points of ecumenical convergence and remaining differences on select doctrinal topics involving the Catholic Church. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8533. Christians and Muslims in Dialogue. 3 cr. hrs.
A survey of the efforts made to advance Muslim-Christian relations. An examination of joint declarations issued by formal dialogues as well as select individual contributions of Muslim and Christian scholars. Primary attention to those dialogues sponsored by the sub-unit on Dialogue with Peoples of Living Faiths of the World Council of Churches, and the Pontifical Council of Interreligious Dialogue. Includes dialogues co-sponsored and/or organized by Muslim organizations. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8534. Fundamental Theology. 3 cr. hrs.
A historical and systematic study of the fundamentals of theology: faith, revelation, tradition, and Church. Attention given to: faith as the response to revelation, the connection between faith and reason, revelation as God's self-communication, the relationship between scripture and tradition, and the role of the magisterium in preserving and interpreting sacred scripture and tradition. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8535. Public Theology in Postmodern Context. 3 cr. hrs.
The interpretation and application of the gospel to a given cultural context in the light of Scripture and Tradition. Not identical with the normative reflections of social ethics nor assuming the narratives of liberation and political theology, public theology focuses on public issues for the sake of the churches and on Christian meanings for the sake of the public square and the common good. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8536. Theology of Hans Urs von Balthasar. 3 cr. hrs.
Study of the major texts of Hans Urs von Balthasar, with special attention given to his trilogy. Possible themes include: Balthasar's elucidation of beauty as essential to theological discourse, Balthasar's efforts to reunite theology and spirituality through the fundamental connection between holiness and the theological enterprise, and Balthasar's Christological and Trinitarian theological method. A consideration of Balthasar's contribution to theology today. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8537. Theology of Jürgen Moltmann. 3 cr. hrs.
An examination of the theology of Jürgen Moltmann, both in its development and in its major themes. An emphasis on the close connection between theology and practice in Moltmann and the way his work represents a specific understanding of the task of theology. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8538. African Christianity. 3 cr. hrs.
An introduction to the key components, characteristics, and features of Christian theologizing in Africa. Further studies other relevant aspects of African theology, including religion and politics, comparative and applied ethics, the places of other African religions (especially traditional religions), and the contributions of African Christianity to global Christianity. Prereq: Admitted to REST-Ph.D. program or cons. of dept. ch.

THEO 8539. World Christianity. 3 cr. hrs.
An introduction to Christianity in the contemporary global context. Addresses the dynamism of Christianity's ongoing expansion, commonalities and differences in its expression, and the impact of its disparate contexts and situations on the mutual influence between Christianity and its neighboring world religions and cultures. Prereq: Admitted to REST-Ph.D. program or cons. of dept. ch.

THEO 8540. Interfacing Theology and the Natural Sciences. 3 cr. hrs.
Ways in which theology and the natural sciences (e.g., physics, biology, and geology) have been related historically provide the perspective from which to examine current efforts to reflect on God, the world and humanity in a scientific age. Basic scientific facts and established theories inform theological discourse, and scientists are consulted for more in-depth understanding. Methods for teaching constructive relationship of the disciplines are explored and demonstrated by students. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8550. Special Questions in Systematic Theology. 3 cr. hrs.
Specialized research in one area or problem in systematic theology. Specific topic(s) announced. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8610. Moral Theology: The Catholic Tradition. 3 cr. hrs.
General outlines of the development and exposition of Catholic moral theology through an examination of historical studies of Christian Ethics written in the 20th century and of selected original texts. Moral teaching in early Christianity; development of systems of moral teaching; the history of casuistry; moral theology as a separate theological discipline; the understanding of the love commandment as found in different periods. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8611. The Protestant Tradition in Christian Ethics. 3 cr. hrs.
Study of selected writings of the Reformers on ethical subjects and of selected ethical writings from important Protestant schools of theology. Representatives of sectarian Protestant thought on ethical topics. Contemporary developments in Christian ethics found in the writings of outstanding Protestant thinkers in this century. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8612. Basic Issues in Christian Social Ethics. 3 cr. hrs.
Social teaching of the Christian churches. A systematic treatment of issues such as the relation between love and justice. The teachings of the Christian churches on matters such as war and peace; the rights and duties of states and citizens; the rights, duties, and obligations of members of a family; the rights, duties, and obligations of parents with respect to their children. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8613. Method in Theological Ethics. 3 cr. hrs.
Exploration of contemporary developments in methodological approaches to theological ethics. Particular attention to the theological nature of methodology as well as the interrelationship between other academic disciplines and the formation of method in theological ethics. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8614. Health Care Ethics. 3 cr. hrs.
Exploration of theological perspectives on medicine. Particular attention to thinking on health care within the Catholic tradition, as well as developments across the Christian tradition. Emphasis on theological methodology as well as engagement with select ethical issues in medicine. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8615. Body, Gender and Sexuality. 3 cr. hrs.
Analysis of how the human person's being a body directs our thinking in Christian theology. Human bodies as essential to what humans are, as both a possible limit on humans and an occasion of transcendence. The body as a source of thinking about persons and how they should act. The nature of sexual differentiation and of gender and implications for Christian anthropology and ethics. Human sexuality and its influence on individuals and communities. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8616. Theology and Economics. 3 cr. hrs.
A theological evaluation of economic theories and practices, particularly as they bear on the rise and ascendency of the global market. Includes a history of economic thought with particular attention to moral theory. The tradition of economic thought within Christian theology. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8617. Catholic Social Thought. 3 cr. hrs.
A comprehensive examination of the engagement of Catholic faith with the public square. Detailed analysis of fundamental themes within the Catholic Social Teaching tradition through a study of the documents of the papal encyclical tradition, social thought originating from and upon the U.S. context, and the various interpretations of the Catholic Social Teaching tradition. Consideration of Catholic socio-ethical engagement with emerging concerns in public discourse. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8618. Liberation Ethics and the Option for the Poor. 3 cr. hrs.
An exploration of the ethical dimensions of liberationist theological reflection, addressing the contributions and challenges to Christian moral discourse, analysis, and reflection, which emerge from the theologies of liberation and their stance of solidarity with the victims of injustice. Attention given to both the commonality and diversity present in this theological movement. Consideration of the implications of the option for the poor for ethical reflection and action. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8619. Theology, Technology and Ethics. 3 cr. hrs.
Provides an historical overview of theological discourse on technology, considers effects of current technologies (e.g., biotechnology, social communications, artificial intelligence, energy and transportation), addresses ethical principles pertaining to their research, development, deployment and use from the perspective of Catholic and other Christian traditions, and explores and demonstrates effective methods for teaching this interdisciplinary subject. May include the views of other world religions Prereq: REST-PhD student or cons. of dept. ch.

THEO 8620. Theology of Creation and Ethics. 3 cr. hrs.
Explores how the theological traditions of Christianity, Judaism and Islam recognize as moral problems the loss of biological diversity, degradation of ecological systems and threats to the biosphere caused by human actions. Critically examines contemporary theological efforts (e.g., reconstructionist and eco-feminist) to address these problems. Develops effective approaches to teaching at the undergraduate level. The traditions and perspectives of other world religions (e.g., Hinduism, Jainism and Buddhism) may be included. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8621. Virtue Ethics. 3 cr. hrs.
Covers a range of topics in contemporary reappropriations of virtue ethics, with brief historical background. Includes fundamental virtue theory (Aristotle, Aquinas, MacIntyre’s After Virtue); contemporary contributions to virtue approaches (e.g., biblical virtue ethics, virtue and limits to moral agency) and applied virtue ethics. Both Protestant and Catholic approaches are treated at length. Prereq: Admitted to REST-Ph.D. program or cons. of dept. ch.

THEO 8622. Freedom, Sin and Conscience. 3 cr. hrs.
Explores the Christian understanding of the role of freedom in the moral life, paying particular attention to the role of sin in restricting freedom. Examines the theology of conscience and its primacy in theological ethics. Covers controversies emerging from the practical interaction of freedom, sin, and conscience, including the dangers of erroneous conscience, the prospects of collective conscience and the notion of social/structural sin. Prereq: Admitted to REST-Ph.D. program or cons. of dept. ch.

THEO 8650. Special Questions in Moral Theology. 3 cr. hrs.
Specialized research in one area or problem in moral theology. Specific topic(s) announced. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8710. Special Questions in Interdisciplinary Studies. 3 cr. hrs.
Specialized research in one area or problem in interdisciplinary studies. Specific topic(s) announced. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8711. Teaching Theology at the College Level. 0 cr. hrs.
Explores effective means of teaching theology and religion in a liberal arts college setting. Addresses pedagogical techniques, learning styles, course design and assessment. Provides opportunities for new instructors to develop their communication and course management skills and to receive feedback from their students and faculty mentors. S/U grade assessment. Prereq: Admitted to REST-Ph.D. program or cons. of dept. ch.

THEO 8995. Independent Study in Theology. 1-3 cr. hrs.
Prereq: Cons. of dept. ch.; cons. of graduate prog. dir.

THEO 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

THEO 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9998. Doctoral Dissertation Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Speech-Language Pathology (SPLA)

Interim Chairperson: Kim Halula, Ph.D.

Speech Pathology and Audiology website (https://www.marquette.edu/grad/programs-speech-language-pathology.php)

Degree Offered

Master of Science

Program Description

Master’s Degree Program

The master’s education program in speech-language pathology at Marquette University is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA) of the American Speech-Language-Hearing Association (ASHA), 2200 Research Boulevard #310, Rockville, Maryland 20850, (800) 498-2071 or (301) 296-5700. The program is directed at preparing students for the Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP). For students interested in licensure as a public school speech-language clinician, the program meets the requirements of the Department of Public Instruction of the state of Wisconsin (DPI-Wis.) for licensure as a speech-language pathologist.

The graduate curriculum in speech-language pathology offers advanced course work in the prevention, identification, evaluation and treatment of speech, language and hearing disorders in both children and adults, meeting both the academic and clinical requirements of the American Speech-Language-Hearing Association and the licensure requirements of the state of Wisconsin.

The master of science program in speech-language pathology typically takes two years (four terms and one summer session) to complete; however, the time required to complete degree and certification/licensure requirements may be shorter or longer depending on the student’s academic/clinical background, needs and special interests.

Bilingual English-Spanish (BIES) Specialization

A bilingual English-Spanish specialization (BIES) is offered through the master’s degree program. This program prepares speech-language pathologists who are proficient in Spanish to evaluate and treat communication disorders in individuals who speak Spanish or are bilingual (Spanish-English). Candidates for the BIES must be accepted to the master of science program in speech-language pathology. Candidates also must meet language proficiency requirements established by the American Council for the Teaching of Foreign Languages.

Graduate-level academic course work for the BIES may fulfill elective requirements for the master of science degree in speech-language pathology. Clinical practicum hours through the BIES program will apply toward a master of science degree, ASHA certification and DPI licensure requirements. All course work is based on guidelines suggested by the American Speech-Language-Hearing Association for speech-language pathologists providing bilingual assessment and intervention.

Prerequisites for Admission

Applicants should have graduated with, or are about to graduate with, a bachelor’s degree from an accredited institution with a major in communicative disorders, or its equivalent, and an undergraduate grade point average of B or above. Students who do not meet these standard requirements must be prepared to complete undergraduate background courses as advised by the program director.

Application Deadline

To be considered for admission, all application requirements and fees must be completed according to the instructions on the Communication Sciences Disorder Centralized Application Service (CSDCAS) by January 15.

Application Requirements

Applicants must submit, directly to CSDCAS:

2. Official transcripts from all current and previous colleges/universities attended.
3. Three recommendations submitted from individuals familiar with the applicant’s academic and clinical work.
4. A 1-2 page personal statement, double spaced (BIES applicants should reference their interest in the program).
5. A CV/resume.
6. A critical thinking question.
7. GRE scores (General Test only) using institution code 7435.
8. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.
9. (For BIES applicants only) the completed BIES portion of the application in CSDCAS.
10. (For BIES applicants only) proof of Spanish proficiency, provided directly to the department, prior to admission (recommended, but not required). Instructions can be found online (http://www.marquette.edu/speech-pathology-audiology/bies-application.shtml/).

Marquette University undergraduate students who apply to the speech pathology and audiology accelerated bachelor's-master's degree program who are not accepted may be offered early decision (ED), which is an offer of admission to the master of science program the fall term following graduation from the undergraduate program. For more information, please see the ADP section on the SPLA Master's Requirements tab.

**ADP APPLICATION REQUIREMENTS**

In order to apply to the accelerated degree program, applicants must be in their junior year in the Marquette University speech pathology and audiology program and meet the minimum GPA of 3.500. The GRE is waived for ADP applicants.

Applicants must submit, directly to the Graduate School:

1. An online (http://www.marquette.edu/grad/future-apply.php) application form completed during the applicant's junior year that states they are applying to the summer term immediately following completion of the undergraduate degree.
2. Official transcripts from all current and previous colleges/universities attended except Marquette.
3. Three recommendations submitted from individuals familiar with the applicant's academic and clinical work.
5. A CV/resume.
6. A critical thinking question.

**Students with Communicative Disorders**

The Department of Speech Pathology and Audiology at Marquette University is dedicated to graduating students with optimum preparation for successful careers in the profession of communication disorders. Since voice, fluency, articulation, language or hearing impairments may interfere with a clinician's ability to effectively treat persons with communication impairments, we encourage students in our program with such impairments to seek treatment.

**English Proficiency**

Our department supports the position of the American Speech-Language-Hearing Association in encouraging persons of diverse backgrounds to enter the field of communication disorders. All students in the Department of Speech Pathology and Audiology must provide evidence of adequate written and verbal communication skills in Standard American English necessary to meet academic and clinical requirements. Non-native speakers of English work closely with their advisers throughout the course of their study toward establishing this proficiency prior to enrollment in clinical practicums. Students who speak with accents and/or dialects may seek assistance in improving these skills at the recommendation of department instructional staff.

**Speech-Language Pathology Master's Requirements**

Students seeking the master of science degree in speech-language pathology (SPLA) must have completed the following undergraduate prerequisite courses, or their equivalents, per approval from the director of graduate studies prior to full admission into the graduate program: anatomy and physiology of the speech mechanism, phonetics and phonology, child language development, child language disorders, child speech sound disorders, speech science, introduction to audiology, and intervention methods in speech-language pathology.

Students are admitted to the program in Plan B, but may transfer to Plan A with approval from the Graduate School and the SPLA director of graduate studies.

**Thesis Program (Plan A)**

Students must complete a minimum 46 credit hours (at least 40 credit hours of course work plus six credit hours of thesis work), take the Praxis examination, receive a satisfactory grade in a capstone course and submit an approved thesis.

**Non-Thesis Program (Plan B)**

Students must complete a minimum of 46 credit hours of course work, take the Praxis examination and receive a satisfactory grade in a capstone course.

**Required Course Work**

For both Plan A and Plan B, a minimum of 46 credit hours must be completed. A maximum of 12 credit hours of graduate-level course work completed prior to admission into the graduate program may be transferred and applied toward the minimum 46 credit hour degree requirement. Transfer courses must be completed with a grade of B or above and approved by the director of graduate studies in accordance with the Graduate School Transfer of Credit policy. At least one-half of the completed course work must be in 6000-level courses.

Advised by the director of graduate studies, admitted students create a program plan of study that fulfills the requirements for both the master of science degree in speech-language pathology and the Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP) awarded by the American
Speech-Language-Hearing Association. Students interested in working as a school-based speech-language pathologist in the State of Wisconsin require a program plan of study that includes requirements put forth by the Department of Public Instruction of the State of Wisconsin (WI-DPI).

### Required Course Work and Clinical Hours

<table>
<thead>
<tr>
<th>Required or Elective Course Work</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPPA 5160</td>
<td>Neurological Bases of Human Communication Processes and Related Functions</td>
</tr>
<tr>
<td>SPPA 5230</td>
<td>Stuttering and Other Fluency Disorders</td>
</tr>
<tr>
<td>SPPA 5520 (or SPPA 5530)</td>
<td>Hearing Disorders or Audiological Rehabilitation</td>
</tr>
<tr>
<td>SPPA 5720</td>
<td>Diagnostic Methods in Speech-Language Pathology</td>
</tr>
<tr>
<td>SPPA 6210</td>
<td>Child Language Intervention Issues</td>
</tr>
<tr>
<td>SPPA 6320</td>
<td>Adult Language Disorders</td>
</tr>
<tr>
<td>SPPA 6330</td>
<td>Sensorimotor Speech Disorders</td>
</tr>
<tr>
<td>SPPA 6410</td>
<td>Voice Disorders</td>
</tr>
<tr>
<td>SPPA 6420</td>
<td>Swallowing Disorders</td>
</tr>
<tr>
<td>SPPA 6640</td>
<td>Augmentative and Alternative Communication (AAC)</td>
</tr>
<tr>
<td>SPPA 6750</td>
<td>Clinical Research Methodology</td>
</tr>
</tbody>
</table>

Elective options (chosen by the student, if other requirements are met)

| SPPA 5610                        | Multicultural Issues for Speech-Language Pathologists |
| SPPA 6340                        | Cognitive Disorders |
| SPPA 6430                        | Craniofacial Disorders |
| SPPA 6650                        | Intervention Issues with the Birth-to-Three Child |
| SPPA 6961                        | Special Institute/Workshop/Project |
| SPPA 6995                        | Independent Study |

Other graduate-level SPPA courses as approved by adviser or director of graduate studies.

<table>
<thead>
<tr>
<th>Thesis credits (Plan A) or Additional course work (Plan B)</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPPA 6999</td>
<td>Master's Thesis</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Additional graduate-level SPPA courses as approved by adviser or director of graduate studies.</td>
<td></td>
</tr>
</tbody>
</table>

Additional Required Course Work and Clinical Hours:

Students must earn 400 clinical clock hours overall: 375 direct patient contact hours in either evaluation or therapy (325 of these must be earned at the graduate level) and a minimum of 25 observation hours. Total hours should represent all areas in the scope of professional practice, be across the lifespan, and include diverse client populations. A total of 13 graduate-level credit hours, listed below, are needed to satisfy this requirement:

<table>
<thead>
<tr>
<th>SPPA 6730</th>
<th>Procedures in Medical and School Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPPA 6790</td>
<td>Clinical Grand Rounds in Speech-Language Pathology</td>
</tr>
<tr>
<td>SPPA 6965</td>
<td>Practicum in Speech-Language Pathology: Campus Clinic (1 credit, taken twice)</td>
</tr>
<tr>
<td>SPPA 6966</td>
<td>Practicum in Speech-Language Pathology: Diagnostic Methods</td>
</tr>
<tr>
<td>SPPA 6967</td>
<td>Practicum in Speech-Language Pathology: School Setting</td>
</tr>
<tr>
<td>SPPA 6968</td>
<td>Practicum in Speech-Language Pathology: Medical Setting</td>
</tr>
</tbody>
</table>

Total Credit Hours 46

1 In consultation with the director of graduate studies, a plan of study is developed with each student prior to admission and depends on the student's academic background.

### PRAXIS Examination and Capstone Course Work

The Praxis Series Specialty Area Test in Speech-Language Pathology administered by the Educational Testing Service (ETS), along with the graduate course SPPA 6790 Clinical Grand Rounds in Speech-Language Pathology, comprise the required examination and capstone course work for students in the speech-language pathology program. Students must take the Praxis examination no later than two (2) months prior to graduation. Results of the examination must be received in the Department of Speech Pathology and Audiology prior to the date for submission to the Graduate School as specified in the Academic Calendar (http://www.marquette.edu/mucentral/registrar/cal_index.shtml). In addition, a grade of Satisfactory in SPPA 6790 Clinical Grand Rounds in Speech-Language Pathology must be obtained.
Bilingual English-Spanish (BIES) Specialization Requirements

The BIES specialization program requires students to be enrolled in the master of science degree program in speech-language pathology. A Spanish major is not required for admission to the BIES specialization program but non-native Spanish speaking applicants are required to demonstrate oral proficiency via a passing score on the American Council on the Teaching of Foreign Language (ACTFL) oral proficiency test. Applicants are advised to submit oral proficiency test results with the application to the master of science program. Testing information can be found on the Speech Pathology and Audiology Department's BIES specialization website (http://www.marquette.edu/speech-pathology-audiology/bies.shtml/), or by contacting the department directly.

Graduate-level academic course work for the BIES may fulfill elective requirements for the master's degree in speech-language pathology.

Required course work:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAN 4120/5120</td>
<td>Spanish Phonetics</td>
<td>3</td>
</tr>
<tr>
<td>SPPA 4610/5610</td>
<td>Multicultural Issues for Speech-Language Pathologists</td>
<td>3</td>
</tr>
</tbody>
</table>

Students are required to complete or have previously completed (1) a three-credit course in Spanish phonetics and (2) a three-credit course in multicultural issues relevant to clinical practice, as listed above. These courses may be taken at either the graduate or undergraduate level. Only if taken at the graduate-level, however, can these courses fulfill electives for the graduate plan of study. Courses taken elsewhere must be approved by the program director.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPPA 6620</td>
<td>Speech and Language Assessment in Bilingual Populations</td>
<td>3</td>
</tr>
<tr>
<td>SPPA 6630</td>
<td>Speech and Language Intervention in Bilingual Populations</td>
<td>3</td>
</tr>
</tbody>
</table>

Required practicum courses: A minimum of 50 clinical practicum hours with individuals who speak Spanish or who are bilingual (Spanish-English) speakers must be obtained under the supervision of a bilingual speech-language pathologist through the following courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPPA 6965</td>
<td>Practicum in Speech-Language Pathology: Campus Clinic</td>
<td>1</td>
</tr>
<tr>
<td>SPPA 6966</td>
<td>Practicum in Speech-Language Pathology: Diagnostic Methods</td>
<td>1-2</td>
</tr>
<tr>
<td>SPPA 6967</td>
<td>Practicum in Speech-Language Pathology: School Setting</td>
<td>3</td>
</tr>
</tbody>
</table>

Accelerated Bachelor's-Master's Degree Program

The Department of Speech Pathology and Audiology offers early admission into its master of science degree program in speech-language pathology to Marquette University students working toward the undergraduate major in speech pathology and audiology. Students can apply for admission to this program during the undergraduate junior year. Students accepted into the accelerated degree program are eligible to enroll in up to 12 credit hours of speech pathology and audiology (SPPA) graduate course work (5000- or 6000-level) during their senior year. Credits obtained from these courses can be used to fulfill both undergraduate and graduate degree requirements. Once students inform the Graduate School of their completion of their undergraduate degree requirements, their graduate admission as a regular degree status student is activated.

Traditional speech-language pathology graduate program students take SPPA 6965 Practicum in Speech-Language Pathology: Campus Clinic at 1 credit per term for two terms. ADP students take SPPA 6965 Practicum in Speech-Language Pathology: Campus Clinic at 1 credit for one term. Similarly, traditional graduate program students take SPPA 6966 Practicum in Speech-Language Pathology: Diagnostic Methods at 1 credit for one term, whereas ADP students take SPPA 6966 Practicum in Speech-Language Pathology: Diagnostic Methods at 2 credits for one term.

Students interested in this program can obtain further information from the Department of Speech Pathology and Audiology office.

Courses

SPPA 5160. Neurological Bases of Human Communication Processes and Related Functions. 3 cr. hrs.
Study of the structural, functional and organizational frameworks of the central and peripheral nervous systems as they relate to human communication processes and related functions. Prereq: Enrolled in the SPLA program.

SPPA 5230. Stuttering and Other Fluency Disorders. 3 cr. hrs.
Introduction to the symptomatology, phenomenology, etiology, assessment and management of stuttering and other fluency disorders in children and adults.

SPPA 5520. Hearing Disorders. 3 cr. hrs.

SPPA 5530. Audiological Rehabilitation. 3 cr. hrs.
An in-depth look at the process of aurical rehabilitation and how amplification, assistive listening devices, sensory aids, visual communication training, auditory training and counseling contribute to that process. Prereq: SPLA program and SPPA 3510; or cons. of instr. and cons. of dept. ch.

SPPA 5610. Multicultural Issues for Speech-Language Pathologists. 3 cr. hrs.
Offered for undergraduate or graduate credit. The study of culture and communication in linguistically diverse populations [i.e., Non-Standard American English speakers, Native Americans, (with emphasis on Wisconsin Native tribes) Asians, and Latinos]. The course will include L1 and L2 acquisition profiles and information pertaining to service delivery with non-native English speakers. The U.S. Latino population will be emphasized. Students' knowledge and understanding of racism will be explored. This course will meet the multicultural requirements for the Wisconsin Department of Public Instruction licensing in speech-language pathology.
SPPA 5520 or cons. of instr.

SPPA 6410. Voice Disorders. 3 cr. hrs.
An in-depth examination of normal and pathological voice. Topics include: forces producing phonation, measures of glottal function, and the effect of pitch, intensity and other variables on vocal function. Emphasis on the diagnosis and treatment of voice disorders using clinical instrumentation.

SPPA 6420. Swallowing Disorders. 3 cr. hrs.
Anatomy and physiology of the normal swallow in adults; anatomic and physiologic disorders affecting the process of swallowing (deglutition) with emphasis on radiographic and bedside diagnostic and treatment procedures. Includes a lab experience and analysis of videofluoroscopic studies of the swallowing process.

SPPA 6430. Craniofacial Disorders. 3 cr. hrs.
Intended to provide a background in craniofacial speech disorders. Begins with a review of embryological development of the head/face, craniofacial syndromes and their etiologies, and the anatomy and physiology of the velopharyngeal mechanism. Discusses the importance of ‘team care’ and the role of the various disciplines on the craniofacial team. Presents both instrumental and non-instrumental assessment techniques. Intervention focuses primarily on adapting traditional and phonological approaches to the treatment of craniofacial speech disorders. Prereq: SPPA 2220 or equiv.

SPPA 6540. Cognitive Disorders. 3 cr. hrs.
Provides a theoretical and clinical framework for understanding the neuropsychological-cognitive-communicative and psychosocial issues associated with neurologic brain injuries and for providing treatment of impaired cognitive-communicative processes. Incorporates knowledge of cortical functions and human cognition for evaluating the communicative-cognitive disorders. Students learn about treatment implementation and communicative counseling by actively solving clinical problems.

SPPA 6540. Child Audiological Habilitation. 3 cr. hrs.
An in-depth study of the assessment, psychosocial problems, and remediation/education of children with prelingual hearing impairments. Prereq: SPPA 5520 or cons. of instr.

SPPA 6540. Speech and Language Assessment in Bilingual Populations. 3 cr. hrs.
Study of the principles and techniques of assessing bilingual populations with an emphasis on the Spanish-English bilingual speaker. Instruction in formal and informal methods and strategies for assessing speech and language skills in children and adults. Prereq: SPPA 5720 or equiv.

SPPA 6630. Speech and Language Intervention in Bilingual Populations. 3 cr. hrs.
Study of intervention approaches and techniques in the remediation of communication disorders in bilingual populations, with an emphasis on the Spanish-English bilingual speaker. Includes speech and language intervention techniques which focus on facilitating language for learning, language for communication, and the remediation of speech and language impairments in adults and children.

SPPA 6640. Augmentative and Alternative Communication (AAC). 3 cr. hrs.
Deals with certain problems met when attempting to habilitate or rehabilitate children and adults who have essentially normal hearing, for whom speech is unlikely to be adequate for at least some communicative purposes (either temporally or permanently). Gestural and instrumental augmentative communication strategies. Provides necessary information to both select the most advantageous strategy for clients and teach them how to use it.
SPPA 6650. Intervention Issues with the Birth-to-Three Child. 3 cr. hrs.
Learn developmental screening, assessment and family-based intervention specific to communicative speech and feeding aspects of the birth-to-three child. Gain knowledge of prevention, assessment and intervention of swallowing and receptive and expressive language development including prelinguistics. Emphasizes identification and treatment issues specific to multicultural considerations, case management, and interdisciplinary/transdisciplinary assessment and intervention.

SPPA 6730. Procedures in Medical and School Settings. 3 cr. hrs.
Introduces terminology, laws and procedural requirements for speech-language pathology programs in both school and medical settings. Presents documentation and professional interactions in a variety of work settings. Combination of lecture and simulated activities to prepare students for functioning in off-campus medical and school placements. Addresses Wisconsin school and medical speech-language pathology licensing and national certification requirements. Complete intermediate review of the State of Wisconsin, Department of Public Instruction portfolio. Prereq: Completion of initial review of the State of Wisconsin, Department of Public Instruction portfolio, or cons. of instr.

SPPA 6750. Clinical Research Methodology. 3 cr. hrs.
Overview of research design and its application to the field of speech-language pathology. Factors affecting validity of research. Different types of experimental and quasi-experimental designs. Analysis and presentation of research data. Ethical, financial, and practical factors that affect the conduct of research.

SPPA 6760. Professional Affairs in Speech Pathology. 3 cr. hrs.
Administrative organization, problems and practices in various settings in which speech and hearing clinicians function: school systems, community clinics, hospitals, universities, training centers, and in private practice.

SPPA 6790. Clinical Grand Rounds in Speech-Language Pathology. 1 cr. hr.
Presentation of challenging cases in communication/swallowing disorders. Prereq: Completion of at least 20 graduate credit hours in speech pathology and audiology.

SPPA 6961. Special Institute/Workshop/Project. 3 cr. hrs.

SPPA 6965. Practicum in Speech-Language Pathology: Campus Clinic. 1 cr. hr.
Supervised direct clinical experience in the campus clinic, with a primary focus on provision of speech-language therapy and potential opportunities for assessment. S/U grade assessment. Prereq: Regular degree status.

Supervised direct clinical experience in the campus clinic, including comprehensive speech-language evaluations and provision of speech-language therapy. S/U grade assessment. Prereq: SPPA 5720, which may be taken concurrently.

SPPA 6967. Practicum in Speech-Language Pathology: School Setting. 3 cr. hrs.
Fee. Speech pathology practicum in a school setting. S/U grade assessment. Prereq: SPPA 5720 and SPPA 6730. Use of private car possibly required for student teaching affiliations inaccessible to public transportation. Student is responsible for transportation costs.

SPPA 6968. Practicum in Speech-Language Pathology: Medical Setting. 3 cr. hrs.

SPPA 6995. Independent Study. 1-3 cr. hrs.
Prereq: Cons. of dept. ch. and cons. of SPPA M.S. dir.

SPPA 6999. Master's Thesis. 1-6 cr. hrs.

SPPA 9975. Field Placement Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch. and cons. of SPPA M.S. dir.

SPPA 9978. Field Placement Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch. and cons. of SPPA M.S. dir.

SPPA 9984. Master's Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch. and cons. of SPPA M.S. dir.

SPPA 9985. Master's Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch. and cons. of SPPA M.S. dir.

SPPA 9986. Master's Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch. and cons. of SPPA M.S. dir.

SPPA 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch. and cons. of SPPA M.S. dir.

SPPA 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch. and cons. of SPPA M.S. dir.
Sports and Exercise Analytics (SPRT)

Program Director: Paula E. Papanek, Ph.D.
Sports and Exercise Analytics website (https://www.marquette.edu/grad/programs-graduate-sports-exercise-data-analytics.php)

Degree Offered
Master of Science

Department of Physical Therapy Mission
To prepare future health care practitioners and researchers with an education rich in clinical experiences, community outreach, and research opportunities to develop leaders guided by the values of “Cura Personalis.”

Program Description
The sports and exercise analytics (SPRT) master’s degree is offered through the program in exercise science, within the Department of Physical Therapy. This degree provides a synergistic intersection between exercise physiology (EXPH), computer science (COSC) and mathematical and statistical sciences (MSSC) utilizing the existing data science (DTSC) core of 15 credits. Graduates of the sports and exercise analytics master of science program will have the analytic skills to develop new applications and interfaces for large and complex sport and human performance datasets combined with foundational knowledge in exercise/sport physiology by which to aid in the interpretation and translation of the results to consumers, end users and clients.

LEARNING OUTCOMES
Upon completion of the master of science in sports and exercise analytics (SPRT), a student will be able to:

1. Articulate changes, trends and implications using analytics tools that can be ethically addressed across data platforms.
2. Design and implement strategies for analyzing data using appropriate methods, tools and datasets.
3. Analyze data to create actionable information, and use it to establish priorities, make decisions and solve problems aligning with the ethics, needs and values of individuals, communities and stakeholders.
4. Display and explain the results of analytics projects using effective written, graphic and verbal tools and techniques.
5. Use advanced data processing tools incorporating regulatory, data governance, master data management, data profiling, parallel and distributed processing best practices.
6. Manage data analytics projects and teams throughout the analytics lifecycle.
7. Interpret and translate sports and exercise performance data for targeted consumers (private, public).

PREREQUISITES FOR ADMISSION
1. Earned baccalaureate degree in any field with a minimum GPA of 3.000.
2. Information systems (coding/programming) competency (COSC 1010 Introduction to Software Development), or successful completion of the Coding Bootcamp that is offered by the Department of Computer Science, or an equivalent taken elsewhere.
3. An undergraduate or graduate statistics class, such as MATH 1700 Modern Elementary Statistics, PSYC 2001 Psychological Measurements and Statistics or MATH 4720 Statistical Methods, or equivalent.
4. Foundation course work including anatomy, physiology and exercise physiology courses.

APPLICATION DEADLINE
Applications for this program will be evaluated on a rolling basis.

Application requirements
Applicants must submit the following materials:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.
3. A statement of purpose.
4. Two letters of recommendation (at least one academic reference).
5. Resume or curriculum vitae.
6. GRE scores are required for any non-Marquette University graduate applying to the program. GRE scores are not required for Marquette University students or graduates unless their degree GPA is below 3.000.
7. (For international applicants only) a minimum acceptable score on the iBT TOEFL exam of 90 overall, with minimum section scores of 25 for
listening and speaking, and minimum scores of 20 for reading and writing, or other acceptable proof of English proficiency.

1 Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language
is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for
future terms will be placed on the student’s record.

**Academic Standards**

A cumulative GPA of 3.000 is required in the sports and exercise analytics program. The Academic Regulations section of this bulletin describes the
criteria and procedures for academic warnings, probation, removal of probation and dismissal. The sports and exercise analytics program strictly follows
these policies and procedures.

**Sports and Exercise Analytics Master’s Requirements**

The master of science in sports and exercise analytics requires a minimum of 33 credit hours. If a student is admitted with prerequisite deficiencies,
completion of prerequisite courses does not apply toward master degree requirements. The program of course work and research is determined in
consultation with the student’s adviser.

**Thesis OPTION (Plan A)**

The master’s student in Plan A must complete the required courses in data science (15 credits), the required courses in human performance/exercise
physiology (12 credits) and 6 credits of thesis, for a total of 33 credits.

**Non-Thesis OPTION (Plan B)**

The master’s student in Plan B must complete the required courses in data science (15 credits), the required courses in human performance/exercise
physiology plus electives (15 credits) and 3 credits of project, for a total of 33 credits.

**Required Course Work for Plan A and Plan B**

**Data Science Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COSC 5500</td>
<td>Visual Analytics</td>
<td>3</td>
</tr>
<tr>
<td>COSC 5820</td>
<td>Ethical and Social Implications of Data</td>
<td>3</td>
</tr>
<tr>
<td>COSC 6510</td>
<td>Business Intelligence</td>
<td>3</td>
</tr>
<tr>
<td>COSC 6520</td>
<td>Business Analytics 1</td>
<td>3</td>
</tr>
<tr>
<td>or COSC 6540</td>
<td>Data Analytics</td>
<td>3</td>
</tr>
<tr>
<td>COSC 6570</td>
<td>Data at Scale 2</td>
<td>3</td>
</tr>
<tr>
<td>or COSC 6060</td>
<td>Parallel and Distributed Systems</td>
<td></td>
</tr>
<tr>
<td>or COSC 6380</td>
<td>Advanced Database Systems</td>
<td></td>
</tr>
</tbody>
</table>

**Human Performance/Exercise Physiology Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPH 5192</td>
<td>Advanced Exercise Physiology</td>
<td>3</td>
</tr>
<tr>
<td>SPRT 6110</td>
<td>Advanced Applied Biomechanics in Injury Prevention and Performance</td>
<td>3</td>
</tr>
<tr>
<td>SPRT 6190</td>
<td>Advanced Strength and Conditioning: Data Analytics</td>
<td>3</td>
</tr>
<tr>
<td>SPRT 6958</td>
<td>Readings and Research in Sports and Exercise Analytics (taken once)</td>
<td>0</td>
</tr>
</tbody>
</table>

**Seminar in Sports and Exercise Analytics (taken once)**

Plan A (Thesis) or Plan B (Non-thesis) - refer to requirements below.

**Total Credit Hours**

33

1 COSC 6540 recommended for students with a programming background

2 COSC 6060 or COSC 6380 recommended for students with a computer science background

**Additional Course Requirements Plan A (Thesis)**

<table>
<thead>
<tr>
<th>Elective</th>
<th></th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPRT 6999</td>
<td>Master’s Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>

**Total Credit Hours**

9

**Additional Course Requirements Plan B (non-Thesis)**

<table>
<thead>
<tr>
<th>Electives - approved EXPH/EXRS/MSSC/COSC courses at 5000 level or higher</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPRT 6600 Project Design and Development in Sports and Exercise Analytics</td>
<td>1</td>
</tr>
</tbody>
</table>
MASTER'S DEGREE WITH THE DATA SCIENCE CERTIFICATE

The Department of Computer Science offers a data science certificate. If a sports and exercise analytics master's student chooses to also earn the certificate, admission to both programs may be concurrent. The same courses may be used to satisfy the requirements of the master’s program and certificate, as outlined in the university bulletin for each program. Students are expected to be admitted into all programs they intend to complete, although course work completed prior to admission may be allowed to apply toward program requirements. Certificates must be approved individually via the curriculum approval process as Title IV aid eligible in order for students in any of these programs to be eligible to apply for federal financial aid.

Details on the data science certificate can be found in this bulletin.

Courses

**SPRT 6110. Advanced Applied Biomechanics in Injury Prevention and Performance. 3 cr. hrs.**
In-depth study of advanced biomechanical applications that are used to prevent injuries and improve performance. Major emphases are the critical evaluation of scientific and evidence-based literature along with an in-depth understanding of current biomechanical laboratory techniques. Prereq: Admitted to graduate EXRS or SPRT program.

**SPRT 6190. Advanced Strength and Conditioning: Data Analytics. 3 cr. hrs.**
In-depth exposure into the role and use of data analytics in the field of strength and conditioning. Emphasis is placed on the analysis, interpretation and communication of data in ways that are meaningful and actionable by practitioners. Prereq: Admitted to graduate EXRS or SPRT program.

**SPRT 6600. Project Design and Development in Sports and Exercise Analytics. 1 cr. hr.**
Provides mentorship in the design and development of the non-thesis master's project to include selecting the topic, population, community or site for project, design of methods and developing the agreements or contracts for the project. S/U grade assessment. Prereq: SPRT 6958.

**SPRT 6931. Topics in Sports and Exercise Analytics. 1-3 cr. hrs.**
Topics are presented that are not a part of the regular course work but are taught because of a special need, interest or opportunity. The number of hours is arranged according to specific circumstances and credits. Exposure to various topics, techniques and methods are presented by experts in the topic. May be taken more than once when topics vary. Prereq: Cons. of grad. prog. dir.

**SPRT 6958. Readings and Research in Sports and Exercise Analytics. 0 cr. hrs.**
Introduces readings and ongoing research in individual laboratories of faculty within the SPRT program. The number of hours varies, but the rotation typically consists of two rotations. Involves laboratory work, attending laboratory meetings, individual meetings with laboratory PI and oral presentation of progress made in this rotation. Directs students toward potential laboratories with interest or expertise as identified by the student in areas related to sport and exercise analytics. Students select their research mentor and collaborators for their project by the end of the course. SNC/UNC grade assessment. Prereq: Admitted to graduate SPRT program.

**SPRT 6995. Independent Study in Sports and Exercise Analytics. 1-3 cr. hrs.**
Independent study under the direction of faculty. Prereq: Cons. of instr.

**SPRT 6998. Professional Project in Sport and Exercise Analytics. 1-2 cr. hrs.**
Required course for the non-thesis option in Sport and Exercise Analytics. The final output of the course is a presentation of a completed project that meets project director's approval. S/U grade assessment. Prereq: SPRT 6600.

**SPRT 6999. Master's Thesis. 1-6 cr. hrs.**
S/U grade assessment.
Theology (THEO) / Religious Studies (REST)

Chairperson: Danielle K. Nussberger, Ph.D.
Department of Theology Graduate Programs website (https://www.marquette.edu/theology/graduate-program-overview.php)

Degrees Offered

Theology
Master of Arts in Theology (M.A.)
Master of Arts in Christian Doctrine (M.A.C.D.)

Religious Studies
Doctor of Philosophy (Ph.D.)

Program Descriptions
The Department of Theology offers graduate programs aimed at providing students an integrated approach to theology emphasizing the scriptural, historical, systematic, and ethical approaches to study in the Catholic and Christian religious traditions. We aim to develop scholars capable of making significant contributions to theological research and teaching a broad range of subjects in theology and religion. Our programs have prepared graduates to secure teaching positions in over 200 colleges, universities, and other educational institutions as well as for vocations in pastoral ministry and other service-oriented and non-profit organizations.

The Master of Arts in Theology (M.A.) program is intended primarily for students who intend to pursue doctoral degrees in theology or religious studies. It also serves those working or aspiring to work in Church-related organizations involving teaching, religious formation, or other forms of theological communication.

The Master of Arts in Christian Doctrine (M.A.C.D.) program focuses on ecumenical appropriation and communication of Christian doctrine for students teaching or aspiring to teach in Catholic high schools, those interested in contributing to other avenues of religious education or formation, those interested in serving other pastoral needs in their religious communities, and those seeking personal theological enrichment.

The Doctor of Philosophy in Religious Studies (Ph.D.) program leads to a terminal academic degree signifying its recipient's advanced ability to teach and conduct research in the academic specialization of his or her choosing. Options for specialization include Judaism and Christianity in Antiquity, Historical Theology, Systematics Theology, Theological Ethics, and Theology and Society (including Healthcare and Medical Ethics).

Prerequisites for Admission

Master of Arts in Theology (M.A.) applicants should have an undergraduate degree with a major in theology, religious studies, or another field appropriate to their theological interests. An undergraduate degree with a minor in one of those fields is also acceptable. Ideally, applicants should possess basic familiarity with Christian Scripture and doctrines. Opportunities to make up for deficiencies in undergraduate education are available to students in need.

Master of Arts in Christian Doctrine (M.A.C.D.) applicants should have (a) an undergraduate degree with a major in theology or religious studies, and/or (b) a personal or professional background involving theology or religion. Ideally, applicants should possess basic familiarity with Christian Scripture and doctrines. Opportunities to make up for deficiencies in undergraduate education are available to students in need.

Doctor of Philosophy in Religious Studies (Ph.D.) applicants should possess a master's degree or equivalent graduate degree in theology, religious studies, or another field appropriate to their academic interests.

Application Deadlines

Master of Arts in Theology (M.A.) applicants seeking financial aid must submit their completed applications, including all supporting documents, by December 15 of the calendar year prior to the fall academic term in which they wish to enroll in the program. The department normally will not consider requests for financial aid from applicants seeking to enroll in the spring or summer term. Applicants not seeking financial aid may submit their applications at any time, albeit no less than one month prior to the commencement of the academic term in which they wish to enroll in the program.

Master of Arts in Christian Doctrine (M.A.C.D.) applicants may submit their completed applications, including all supporting documents, at any time and may enroll in the program in the fall, spring, or summer academic term, albeit no less than one month prior to the commencement of the academic term in which they wish to enroll in the program. The department will consider requests for financial aid regardless of the term in which applicants wish to enroll in the program.

Doctor of Philosophy in Religious Studies (Ph.D.) applicants seeking financial aid must submit their completed applications, including all supporting documents, by December 15 of the calendar year prior to the fall academic term in which they wish to enroll in the program. The department normally will not consider requests for financial aid from applicants seeking to enroll in the
program in the spring or summer term. Applicants not seeking financial aid may submit their applications at any time, albeit no less than one month prior to the commencement of the academic term in which they wish to enroll in the program.

Application Requirements

Applicants to all of the department's graduate programs must submit their applications to the Graduate School using its online application management system (https://graduate.admissions.marquette.edu/apply/).

Applicants to the **M.A. program** must submit the following materials:

1. A completed application form and processing fee.
2. Copies of transcripts from all previously attended higher education institutions other than Marquette University.
3. Results of the Graduate Record Examination (General Test only).
4. A statement of purpose indicating the applicant's reasons for wanting to enter the program, areas of academic interest, vocational objectives, reasons for selecting Marquette's program, and/or how the applicant stands to contribute to the program's demographic diversity.
   a. Applicants lacking an undergraduate degree in theology or religious studies should indicate in their statements of purpose relevant college course work reflected in their transcripts.
5. Three letters of recommendation.
6. International applicants must provide TOEFL scores or other acceptable proof of English proficiency.
   a. International applicants who have completed another master's degree or anticipate completing another master's degree at an English-speaking higher education institution prior to enrolling in the M.A. program may request a waiver of this requirement.

Applicants to the **M.A.C.D. program** must submit the following materials:

1. A completed application form and processing fee.
2. Copies of transcripts from all previously attended higher education institutions other than Marquette University.
3. A statement of purpose indicating the applicant's reasons for wanting to enter the program, areas of academic interest, vocational objectives, reasons for selecting Marquette's program, and/or how the applicant stands to contribute to the program's demographic diversity.
   a. Applicants lacking an undergraduate degree in theology or religious studies should indicate in their statements of purpose relevant college course work reflected in their transcripts.
4. Three letters of recommendation.
5. International applicants must provide TOEFL scores or other acceptable proof of English proficiency.
   a. International applicants who have completed a master's degree or anticipate completing a master's degree at an English-speaking higher education institution prior to enrolling in the M.A.C.D. program may request a waiver of this requirement.

Applicants to the **Ph.D. program** must submit the following materials:

1. A completed application form and processing fee.
2. Copies of transcripts from all previously attended higher education institutions other than Marquette University.
3. Results of the Graduate Record Examination (General Test only).
4. A statement of purpose indicating the applicant's reasons for wanting to enter the program, areas of academic interest, vocational objectives, reasons for selecting Marquette's program, and/or how the applicant stands to contribute to the program's demographic diversity.
   a. Applicants with language study experience should indicate formal graduate-level language course work reflected in their transcripts and/or private language study, along with estimations of present abilities reading, writing, and speaking the language or languages studied.
5. An academic writing sample approximately 20 pages in length.
6. Three letters of recommendation.
   a. Applicants currently enrolled in Marquette's M.A. in Theology program must supply three new letters of recommendation speaking to their performances in the M.A. program.
7. International applicants must provide TOEFL scores or other acceptable proof of English proficiency.
   a. International applicants who have completed a master's degree or anticipate completing a master's degree at an English-speaking higher education institution prior to enrolling in the Ph.D. program may request a waiver of this requirement.

1 Upon admission, final official transcripts from all previously attended higher education institutions, with certified English translations if their original language is not English, must be submitted to the Graduate School. Failure to submit those transcripts within the first five weeks of the student's term of enrollment may result in a registration hold barring the student from registering for future academic terms.

**Master of Arts (M.A.) in Theology Requirements**

**Specializations:** General Studies, Historical Theology, Judaism and Christianity in Antiquity, Systematic Theology/Theological Ethics, Theology and Society
Students must complete 30 credit hours of course work, pass a comprehensive examination and submit an approved final project. Students choosing the Judaism and Christianity in antiquity, historical theology, and systematic theology/theological ethics specializations must demonstrate proficiency in a modern language other than English. The following program description summarizes those requirements. Additional information may be found in the Department of Theology's Policies and Procedures (https://www.marquette.edu/theology/policies-and-procedures.php).

**Required Course work**

All students must complete the following required core courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>THEO 6110</td>
<td>Old Testament Method</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6120</td>
<td>New Testament Method</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6210</td>
<td>Origen to Late Medieval</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6220</td>
<td>Late Medieval to Early Modern</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6310</td>
<td>Introduction to Systematic Theology</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6410</td>
<td>Introduction to Theological Ethics</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Credit Hours** 18

**Elective Course Options**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>THEO 6130</td>
<td>The Gospels (JUCA)</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6330</td>
<td>Christian Spirituality (SYTH/THET)</td>
<td>3</td>
</tr>
<tr>
<td>THEO 6415</td>
<td>Catholic Social Encyclical Tradition (SYTH/THET)</td>
<td>3</td>
</tr>
</tbody>
</table>

All THEO courses numbered in the 8000, 8100, 8200 and 8300 ranges (JUCA)

All THEO courses numbered in the 8400 range (HITH)

All THEO courses numbered in the 8500 and 8600 ranges (SYTH/THET)

In consultation with their advisers and not later than the end of the first year of enrollment in the program, students must choose a specialization. Students' choice of specialization dictates the terms of their course of study.

**Specialization Requirements**

**Specializations in Judaism and Christianity in Antiquity, Historical Theology, and Systematic Theology/Theological Ethics**

For the following three specializations, students may pursue either of two academic plans: Plan A or Plan B. Students are assumed to opt for Plan B unless expressly approved by the department's Graduate Committee to pursue Plan A instead.

- Judaism and Christianity in Antiquity (JUCA)
- Historical Theology (HITH)
- Systematic Theology/Theological Ethics (SYTH/THET)

**Plan A Requirements**

Plan A requires the 18 credit hours of core course work as listed above, 3 credit hours in each of the two areas not chosen for the specialization, and 6 credit hours of supervised research toward a master's thesis.

<table>
<thead>
<tr>
<th>Required Course Work</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective Course Work (3 credit hours in each of the two areas not chosen)</td>
<td>6</td>
</tr>
<tr>
<td>THEO 6999</td>
<td>Master's Thesis</td>
</tr>
</tbody>
</table>

**Total Credit Hours** 30

**Plan B Requirements**

Plan B requires the 18 credit hours of core course work as listed above, 6 credit hours of elective course work in the area of the specialization, 3 credit hours in each of the two areas not chosen for the specialization, and the completion of a non-credit master's essay.

<table>
<thead>
<tr>
<th>Required Course Work</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective Course Work (elective course work in the area of the specialization)</td>
<td>6</td>
</tr>
<tr>
<td>Elective Course Work (3 credit hours in each of the two areas not chosen)</td>
<td>6</td>
</tr>
<tr>
<td>Master's Essay</td>
<td>0</td>
</tr>
</tbody>
</table>

**Total Credit Hours** 30
FOREIGN LANGUAGE REQUIREMENT

Students choosing the Judaism and Christianity in antiquity, historical theology or systematic theology/theological ethics specialization are required to demonstrate proficiency in German, French or another modern language other than English essential to their research agenda. Students typically fulfill this requirement by earning a grade of B or above in course work or on a language examination administered by the Department of Languages, Literatures and Cultures (https://www.marquette.edu/languages-literatures-cultures/).

COMPREHENSIVE EXAMINATION

The comprehensive examination is administered by the department's M.A. Examination Committee. The exam is offered once annually in April, although the committee entertains requests to administer it in November as needed. The examination is in three parts, each of which has two sections:

2. Historical Theology: Origin to Late Medieval, Late Medieval to Early Modern
3. Systematic Theology and Theological Ethics

The three parts of the comprehensive examination, each two hours in duration, are taken at the same examination session. Each part consists of six questions, of which students must answer three, including at least one from each section. All questions are based on the comprehensive examination bibliography and questions posted to the Department of Theology's website (https://www.marquette.edu/theology/forms-documents.php).

Specialization in General Studies

Students choosing the general studies option must opt for academic Plan B. They are required to complete the 18 credit hours of core course work as listed above, 12 credit hours of elective course work in any area or areas of specialization, and a non-credit master's essay.

<table>
<thead>
<tr>
<th>Required Course Work</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective Course Work (any area or areas of specialization)</td>
<td>12</td>
</tr>
<tr>
<td>Master's Essay</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Specialization in Theology and Society

Students choosing the theology and society specialization must be affiliated with the Trinity Fellows program and must opt for academic Plan B. They are required to complete the 18 credit hours of core course work as listed above, 12 credit hours of elective course work in any area or areas of specialization, and a non-credit master's essay. Up to 6 credit hours of non-theology course work completed in conjunction with the Trinity Fellows program may be applied to the student's elective course work requirement.

<table>
<thead>
<tr>
<th>Required Course Work</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective Course Work (any area or areas of specialization, including approved non-theology courses)</td>
<td>12</td>
</tr>
<tr>
<td>Master's Essay</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Credit Hours</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Master of Arts in Christian Doctrine (M.A.C.D.) Requirements

Students must complete 30 credit hours of course work and produce a comprehensive paper. The following program description summarizes those requirements. Additional information may be found in the Department of Theology's Policies and Procedures (https://www.marquette.edu/theology/policies-and-procedures.php).

Course Requirements

Required Core courses:

| THEO 6110 | Old Testament Method | 3 |
| THEO 6120 | New Testament Method | 3 |
| THEO 6210 | Origen to Late Medieval | 3 |
| THEO 6220 | Late Medieval to Early Modern | 3 |
| THEO 6320 | Christian Doctrine 1 | 3 |
| THEO 6321 | Christian Doctrine 2 | 3 |
| THEO 6410 | Introduction to Theological Ethics | 3 |
| **Elective course work** | **9** |
| **Total Credit Hours** | **30** |
In addition to the 21 credit hours of required course work, students must complete 9 credit hours of elective course work, choosing one 3-credit course in each of the department's three principal academic areas: Judaism and Christianity in antiquity, historical theology, and systematic theology/theological ethics.

**Elective courses include:**

All THEO courses numbered in the 5000 and 5100 ranges (Judaism and Christianity in Antiquity)

All THEO courses numbered in the 5200 range (Historical Theology)

All THEO courses numbered in the 5300, 5400 and 5500 ranges (Systematic Theology/Theological Ethics)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit</th>
</tr>
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<tbody>
<tr>
<td>THEO 6130</td>
<td>The Gospels (Judaism and Christianity in Antiquity)</td>
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<td>THEO 6415</td>
<td>Catholic Social Encyclical Tradition (Systematic Theology/Theological Ethics)</td>
<td>3</td>
</tr>
</tbody>
</table>

In certain circumstances and with the express permission of the M.A.C.D. program director, students may complete their elective requirements by completing the following doctoral-level courses:

All THEO courses numbered in the 8000, 8100, 8200, and 8300 ranges (Judaism and Christianity in Antiquity)

All THEO courses numbered in the 8400 range (Historical Theology)

All THEO courses numbered in the 8500 and 8600 ranges (Systematic Theology/Theological Ethics)

**Comprehensive paper**

Each student must write a comprehensive final paper presenting an original examination of a topic of interest to the student and employ one or more methods of theological inquiry. The paper should integrate lessons learned in the program and applying those lessons to the student's personal and/or professional experiences, or, alternatively, the student's personal and/or career ambitions.

**Doctor of Philosophy (Ph.D.) in Religious Studies Requirements**

**Specializations:** Judaism and Christianity in Antiquity, Historical Theology, Systematic Theology, Theological Ethics, Theology and Society (includes Health Care Mission and Ethics)

Students must complete 60 credit hours of post-baccalaureate course work, up to 30 of which may be completed prior to their enrollment in the program, demonstrate proficiency in a classical language or languages relevant to their specializations, demonstrate proficiency in two modern languages other than English, pass a doctoral qualifying examination, complete 12 credit hours of dissertation research and produce and successfully defend a doctoral dissertation. The following program description summarizes those requirements. Additional information may be found in the Department of Theology's Policies and Procedures (https://www.marquette.edu/theology/policies-and-procedures.php).

**COURSE WORK REQUIREMENTS**

Upon enrollment in the program, students chooses a specialization. The students' choice of specialization dictates the terms of the course of study. The department's principal areas of specialization are as follows:

- Judaism and Christianity in Antiquity (JUCA)
- Historical Theology (HITH)
- Systematic Theology (SYTH)
- Theological Ethics (THET)

Students choosing one of these specializations must complete 36 credit hours of course work in an area of specialization and typically completes 12 credit hours of course work in each of the two areas not chosen as the specialization. Note that the systematic theology and theological ethics areas are counted as a one for the purpose of course work distribution.

Students may choose from the following courses:

All THEO courses numbered in the 8000, 8100, 8200, and 8300 ranges (JUCA)

All THEO courses numbered in the 8400 range (HITH)

All THEO courses numbered in the 8500 range (SYTH)

All THEO courses numbered in the 8600 range (THET)

The department also offers an interdisciplinary specialization with two program options:

- Theology and Society (THSO)
Students choosing the theology and society specialization must complete at least 30 credit hours of course work in one of the Department of Religion's principal areas of specialization, at least 9 credit hours of course work in each of the department's other two principal areas of specialization, and 12 credit hours of graduate course work in one or more disciplines pertaining to their specific research agenda (e.g., economics, education, history, philosophy, political science or psychology).

- Health Care Mission and Ethics

Students choosing the health care mission and ethics option must complete at least 30 credit hours of course work in one of the Department of Religion's principal areas of specialization, at least 9 credit hours in each of the department's other two principal areas of specialization, and 12 credit hours of graduate course work pertaining to healthcare. (e.g., NURS 6007 Ethics, Policy and Health Care Advocacy, NURS 6009 Organizational and Systems Leadership, HEAL 6841 Health Care Finance, HEAL 6846 Health Care Informatics, HEAL 6848 Health Care Policy, LAW 7156 Current Issues in Health Law, LAW 7181 Elder Law, LAW 7221 Health Law).

Students choosing the interdisciplinary specialization may be required to take additional course work beyond the program's 60-credit-hour minimum to certify their qualifications in both theology and the allied disciplines of their choosing.

FOREIGN LANGUAGE REQUIREMENTS

Students choosing the Judaism and Christianity in antiquity specialization must demonstrate proficiency in classical Hebrew and Greek. Students choosing the historical theology specialization must demonstrate proficiency in Latin, Greek or another classical language essential to their research agenda. Students choosing the systematic theology or theological ethics specialization or the health care mission and ethics interdisciplinary program option must demonstrate proficiency in Latin. Students choosing the theology and society interdisciplinary program option is not required to demonstrate proficiency in a classical language.

All students must demonstrate proficiency in German, French or another modern language or languages other than English essential to the students' research agenda. Students are expected to demonstrate proficiency in one modern foreign language by the end of the first year of enrollment in the program and in two modern foreign languages by the end of the second year. Students typically fulfill these requirements by earning a grade of B or above in course work or on a language examination administered by the Department of (https://www.marquette.edu/languages-literatures-cultures/).Languages, Literatures and Cultures (https://www.marquette.edu/languages-literatures-cultures/).

DOCTORAL QUALIFYING EXAMINATION

Once students have fulfill all of the language requirements and no earlier than their final term completing course work, they are eligible to take the doctoral qualifying examination. The examination has two stages, namely the written examination and the oral examination. The written examination is in four parts, each three hours in duration, and is administered in two sessions, typically on consecutive days. Students complete two of the examination's parts during each session. The oral examination is administered following the administration of the written examination in a single session lasting approximately 90 minutes.

The doctoral qualifying examination is administered by a committee consisting of five of the department's full-time, tenured or tenure-track faculty members selected by the student and approved by the department's Graduate Committee. Students choosing the interdisciplinary specialization typically substitute one of the department's faculty committee members with a comparably credentialed faculty member in another department and/or institution. Each committee member examines the students on a topic or topics corresponding with their area of academic expertise. Students must earn the satisfactory evaluation of each of the five committee members to pass the examination. Students advances to doctoral candidacy once they pass the doctoral qualifying examination, completes their course work requirements, and fulfills all of their language requirements.

Doctoral Dissertation Credits

Upon advancing to doctoral candidacy, students must complete 12 credit hours of dissertation research. All dissertation credit hours must be completed before students schedule their dissertation defense.

Doctoral Dissertation

Students are encouraged to identify a dissertation topic and prospective director toward the end of the completion of the course work and/or while preparing for the doctoral qualifying examination. Students must choose a topic that falls within the scope of the department's common understanding of the discipline of Religious Studies and for which students can locate a member of the department's faculty possessing the competence and interest needed to serve as the dissertation's director.

Once students have determined a topic of research and secured the agreement of a director, they submit a doctoral dissertation outline to the department's Graduate Committee. The outline identifies the dissertation's director and no fewer than three more of the department's full-time, tenured or tenure-track faculty members to serve on the dissertation's review board. Students choosing the interdisciplinary specialization typically substitute one of the department's faculty board members with a comparably credentialed faculty member in another department and/or institution.

Once the Graduate Committee approves the students' doctoral dissertation outline, inclusive of the director and review board, students produce the dissertation to the satisfaction of their director. Upon its completion and the concurrent recommendation of the director, the dissertation is subjected to the board's review during a public defense lasting approximately two hours. Students must earn the satisfactory evaluation of each board member to secure the dissertation's approval.
Following the successful defense of the dissertation, students may be given a fixed amount of time to revise their work in light of the board’s feedback. Students submit the final edition of the dissertation to the Graduate School in advance of their graduation.

Courses

THEO 5000. Digging the Bible: Archeology and Biblical Studies. 3 cr. hrs.
An exploration of the uses and abuses of archeology relative to the field of biblical studies. Case studies in a historical approach to the intersection of archeology and biblical theology.

THEO 5020. The Bible in the Jewish Community. 3 cr. hrs.
The uses of the Bible in Jewish life and practice, in synagogue and in private use. Haggadah and Halakah.

THEO 5030. Women in the Bible. 3 cr. hrs.
Status and roles of women in selected biblical texts. Social and historical background with emphasis on narrative technique and theological themes.

THEO 5190. Studies in Biblical Theology. 3 cr. hrs.

THEO 5200. Theology in the Early Church. 3 cr. hrs.
Basic theological questions and developments during the era of the Church Fathers.

THEO 5210. History and Theology of the Christian East. 3 cr. hrs.
The Christian East from its origins, through the conversion of Constantine, to the present-day Eastern Orthodox and Oriental Orthodox Churches. Particular attention to the distinctive theological emphases of the East, as well as to the developments leading to the break in communion between Catholic (and Protestant) West and Orthodox East.

A study of Augustine's life, writings and thought, with special attention to the Confessions, to his theology of the church and the sacraments, and to his teaching on grace and predestination, against the background of his early philosophical writings.

THEO 5230. Theology in the Middle Ages. 3 cr. hrs.
Basic theological questions and developments during the Middle Ages, from the Carolingians to the 14th century.

THEO 5240. Theology in the Reformation Era. 3 cr. hrs.
Basic theological questions and developments during the late Middle Ages and early Reformation. Also addresses current ecumenical issues.

THEO 5250. Martin Luther. 3 cr. hrs.
The thought and world of Luther, with emphasis on Luther in his Catholic context; Luther and the Bible, Augustine, the Radicals, the Pope; Luther's theology of faith and freedom; contextual, theological and ethical.

THEO 5260. Theology in America. 3 cr. hrs.
Basic theological questions and developments from Puritanism to the present.

THEO 5270. The Many Faces of U.S. Catholicism. 3 cr. hrs.
Investigates the development of diverse manifestations of U.S. Catholic life and thought. Explores how historical and contemporary experiences, including slavery, migration, sexism and other forms of historical exclusion, contribute to the shaping of theologies and practices that are uniquely American and distinctly Catholic.

THEO 5290. Studies in Historical Theology. 3 cr. hrs.
Significant figures and themes in the history of religious thought, examined in their historical context and contemporary significance. Topics and periods vary.

THEO 5300. The Question of God in a Secular Age. 3 cr. hrs.
Origins and varieties of contemporary atheism. The existence of God and Christian theistic interpretations.

THEO 5310. Theology of the Holy Spirit. 3 cr. hrs.

THEO 5320. Jesus the Christ. 3 cr. hrs.

THEO 5330. Theology of the Church. 3 cr. hrs.
The Church in light of the documents, events, and charism of Vatican II. Contemporary understandings of the Church and its mission in the modern world. Special attention to post-conciliar ‘communion ecclesiology’ and the relation of the local to the universal Church.

THEO 5340. Sacraments and Christian Life. 3 cr. hrs.
Theological overview of the major sacramental enactments of the church’s life in Christ. The witness of Scripture and Tradition, including the liturgy itself. Ethical and ecumenical dimensions.
THEO 5350. The Eucharist. 3 cr. hrs.
Biblical origins and historical evolution of the Eucharist in light of contemporary theology and ritual theory, with special focus on the Roman Rite Catholic post-Vatican II celebration.

THEO 5370. Protestant Thought and Practice. 3 cr. hrs.
Major perspectives within the broad spectrum of Protestantism. Examination of the thought of several Protestant theologians. A survey of the unity and diversity of several Protestant denominations and their respective forms of worship.

THEO 5390. Studies in Systematic Theology. 3 cr. hrs.
Significant movements and/or major figures in contemporary systematic theology. Their historical antecedents and cultural context. Specific topics to be specified in the Schedule of Classes.

THEO 5400. Christian Faith and Justice. 3 cr. hrs.
Classic and recent Christian understandings of justice as interpersonal and societal right-relations. Justice as constitutive aspect of the Gospel; love and justice; Christian responsibility in the face of injustice. Further issues, e.g. sexual and gender ethics, political and economic issues.

THEO 5405. Christian Theology in Global Contexts. 3 cr. hrs.
The reception of the Christian gospel in diverse cultures throughout the world. The challenge of inculturation and the requirements of the unity of Christian faith. The meaning of mission and evangelization outside the West. The encounter with indigenous religions.

THEO 5410. Family, Church, and Society. 3 cr. hrs.
The interaction of family, church, and society. Contemporary family patterns, their strengths and stresses; the teachings, reflection, and pastoral responses of the Church concerning marriage and family. Ecclesial and societal implications of family as 'domestic church'.

THEO 5430. Religion and Science. 3 cr. hrs.
Theological analysis of the historical relationship between religion and the natural sciences; exploration of models for relating the two disciplines today; reflection on the theological implications of contemporary scientific discoveries and theories.

THEO 5440. Foundations of Ecological Ethics. 3 cr. hrs.
Exploration of religious foundations for ecological ethics, with a focus on the Catholic tradition and social teachings; application to contemporary ecological problems.

THEO 5450. Medical Ethics. 3 cr. hrs.
Health care practices under moral assessment from within the Christian tradition. Controversial topics facing medicine (issues of the beginning and end of life, assisted reproduction, etc.) as related to Christian moral principles.

THEO 5490. Studies in Moral Theology. 3 cr. hrs.
Selected issues in contemporary moral life; selected themes from classical and contemporary writings in moral theology and Christian ethics. Topics vary, as specified in the Schedule of Classes.

THEO 5500. Christ and World Religions: Theology of Interreligious Dialogue. 3 cr. hrs.
Global pluralism of religions considered from perspectives of Christian faith. Methods and case studies of theological dialogue with particular religious traditions, e.g. Judaism, Islam, Hinduism, Buddhism.

THEO 5510. Survey of World Religions. 3 cr. hrs.
An overview of the major religious traditions of the world: Hinduism, Buddhism, religions of China and Japan, Judaism, Christianity and Islam.

THEO 5520. Jewish Thought and Practice. 3 cr. hrs.
Meaning of Jewish history. Philosophical and social understanding of the Jewish experience. Ruling ideas, myths, symbols, and rites. Partially funded by the Jewish Chautauqua Society.

THEO 5530. Islam: Faith and Practice. 3 cr. hrs.

THEO 5540. Hinduism, Yoga, and Buddhism. 3 cr. hrs.
Religious experience, cultic act, religious organization, theological formulation, as illustrated by two religions of India, Hinduism and Buddhism. Yoga as spiritual discipline. Historical approach. Readings from sacred writings.

THEO 6110. Old Testament Method. 3 cr. hrs.
Introduction to the history, literature, and religion of ancient Israel. History and methods of interpretation. Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.

Background, geography, text, language, versions, editions. Principal problems in individual books. Exegetical techniques. Hermeneutical principles. Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.

THEO 6130. The Gospels. 3 cr. hrs.
Formation, structure, and styles of the four canonical Gospels. Topics to be studied include: their sources, literary relationships, depictions of Jesus, role of the Church, discipleship, and suffering. Each Gospel will be studied in terms of the communities that produced them and their relationship to other texts. Exegesis of selected texts. Prereq: THEO-MA or THEO-MACD student.
THEO 6210. Origen to Late Medieval. 3 cr. hrs.
A brief introduction to historiography and historical method with a more focused introduction to major theological issues and debates (e.g., scripture and tradition; trinity; Christology; grace and sacraments; faith and reason; church and state) and to some of the key contributions of major eastern and western theologians (e.g., Origen, Augustine, Pseudo-Dionysius, John of Damascus, Anselm, Abelard, Gregory Palamas, Aquinas, Bonaventure, Scotus). Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.; required for all master's candidates.

THEO 6220. Late Medieval to Early Modern. 3 cr. hrs.
A basic introduction to theological developments from 1350 to the end of the Enlightenment (1800). Examines major theological movements and the thought of major thinkers (e.g., Ockham, Biel, Erasmus, Luther, Calvin, Bellarmine, Bossuet, Pascal, Spener, Edwards, Lessing, Kant) within their social, historical, and philosophical contexts. Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.; required for all master's candidates.

THEO 6310. Introduction to Systematic Theology. 3 cr. hrs.
Relation of systematic theology to faith, revelation (the Bible, Church creeds and doctrines), and the Church. The role of biblical exegesis, historical scholarship, philosophy, natural and human sciences in systematic theology. Derivation of various categories, subdivisions, and methods of systematic theology. The challenges and prospects of interconfessional and interreligious dialogue for systematic theology. Prereq: THEO-MA student or cons. of dept. ch.

THEO 6320. Christian Doctrine 1. 3 cr. hrs.
A historical and theological introduction to the formation and development of the Christian doctrines of the Trinity, Christology, and Pneumatology. Focuses on the interrelationships of these doctrines. Prereq: THEO-MACD student.

THEO 6321. Christian Doctrine 2. 3 cr. hrs.
A historical and theological introduction to the Christian doctrines of Church, sacraments, and eschatology. Focuses on the interrelationships of these doctrines with one another and with those in Christian Doctrine 1. Prereq: THEO-MACD student.

THEO 6330. Christian Spirituality. 3 cr. hrs.
Explores the theological foundations of and key concepts, texts and figures in the field of Christian spirituality. Focuses on the relationship between theory and practice in historical and contemporary contexts. Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.

THEO 6410. Introduction to Theological Ethics. 3 cr. hrs.
Systematic survey of the fundamental categories, concepts and norms used in moral theology to analyze human moral experience. The role of Scripture and tradition as foundational sources in moral theology. The church as the locus for Christian moral reflection. Pivotal issues in the historical development of moral theology. The relation of moral philosophy to moral theology. Required for master's core curriculum. Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.

THEO 6415. Catholic Social Encyclical Tradition. 3 cr. hrs.
Explores the following principles of Catholic Social teaching: the dignity of persons in community and the common good; the duties of the state and the principle of subsidiarity; kinds of justice and their application in social, political and economic life; the relationship between labor and capital; Church-state relationships; war and peace; and environmental stewardship. The issues are traced through the documents of Vatican II and selected Apostolic Exhortations. Prereq: THEO-MA or THEO-MACD student or cons. of dept. ch.

THEO 6995. Independent Study in Theology. 1-3 cr. hrs.
Prereq: Cons. of dept. ch.

THEO 6998. Professional Project in Theology. 0 cr. hrs.
SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 6999. Master's Thesis. 1-6 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

THEO 8010. Intensive Hebrew Grammar. 3 cr. hrs.
Introduction to Biblical Hebrew. Emphasis will be placed on grammar, verb syntax, and vocabulary acquisition. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8011. Advanced Hebrew. 3 cr. hrs.
Reading of selected narrative and poetic books. Advanced grammar. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8012. Aramaic Dialects. 3 cr. hrs.
Provides the student who already has a background in Biblical Hebrew with a survey of Aramaic dialects, ranging from Ancient Aramaic to Syriac. Includes biblical Aramaic and Qumran Aramaic. Emphasis on providing the student with the tools to use these dialects in other biblical courses. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8120. Sources of Pentateuchal Thought. 3 cr. hrs.
Detailed study of the first five books of the Old Testament. Exegesis of selected passages. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8121. Prophetic Books of Ancient Israel. 3 cr. hrs.
Key themes in the prophetic movement. Relation of the prophets to the cult, society, and history of ancient Israel. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8122. Psalms and Religion of Ancient Israel. 3 cr. hrs.
A study of the literary, theological, and historical dimensions of the book of Psalms. Relationship between the psalms and cultic life. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8123. Former Prophets: Historical Books. 3 cr. hrs.

THEO 8124. Wisdom Books of Ancient Israel. 3 cr. hrs.
Study of the place of Wisdom Literature in the development of Hebrew thought. Exegesis of selected passages. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8125. Intertestamental Literature. 3 cr. hrs.
Study of the books of the Old Testament Apocrypha and Pseudepigrapha. Other developments of the period. Exegesis of selected passages. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8126. Judaism in the Hellenistic Era. 3 cr. hrs.
Jewish history, institutions, movements, and writings of this period, including Qumran, as they pertain to biblical studies. Jewish interpretation of scripture; midrash; haggadah and halakah; targums; Hellenistic influences on Judaism in Palestine and the diaspora; other related topics. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8127. The Writings. 3 cr. hrs.
An investigation into some of the other books of the Hebrew Bible beyond Torah and Prophets. May include literary, theological, and historical elements of 'The Five Scrolls,' Daniel, Ezra-Nehemiah, I and II Chronicles. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8130. Qumran and the Dead Sea Scrolls. 3 cr. hrs.
Overview of the Dead Sea Scrolls and the Qumran community. Covers major texts, contexts and interpretive issues in Qumran research, as well as their application to contemporary critical scholarship on the Hebrew Scriptures, the New Testament, early Judaism and early Christianity. Prereq: Admitted to REST-Ph.D. program or cons. of dept. ch.

THEO 8150. Special Questions in Old Testament Studies. 3 cr. hrs.
Specialized research on topics or problems within and/or related to the Old Testament writings. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8210. Intensive Hellenistic Greek Grammar. 3 cr. hrs.
An introduction to the Greek of the Hellenistic era, including the New Testament. Emphasis on grammar, syntax, vocabulary acquisition and historical context and theology. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8211. Advanced Hellenistic Greek. 3 cr. hrs.
Advanced grammar; readings in texts from 300 B.C. to 300 A.D. Emphasis on the language of the New Testament as reflective of continuity and change in Greek vocabulary, morphology, syntax, style, and the historical context and theology of these texts. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8310. Hellenistic Backgrounds to the New Testament. 3 cr. hrs.
Introduction to various Graeco-Roman issues and movements which influenced the development of New Testament writings. Study of traditional religion, mystery cults, philosophical schools, astrology and magic, literary genres and tendencies, and other related topics. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8311. Apocalyptic Literature. 3 cr. hrs.
Origin and development of prophetic and apocalyptic eschatology. The social and religious phenomenon of apocalypticism. The genre 'apocalypse' in Jewish and early Christian tradition. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8312. Formation of the Gospel Tradition. 3 cr. hrs.

THEO 8313. Matthew. 3 cr. hrs.
Formation, structure, and style of the Gospel of Matthew. Redactional and literary analysis of the Gospel to reconstruct the theology and the situation which produced it. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8314. Mark. 3 cr. hrs.
Formation, structure, and style of the Gospel of Mark. Redactional and literary analysis of the Gospel to reconstruct the theology and the situation which produced it. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

Formation, structure, and style of Luke-Acts. Redactional and literary analysis of these two volumes to reconstruct the theology and the situation which produced them. Questions of Christian origins. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8316. The Johannine Tradition. 3 cr. hrs.
Formation, structure, and style of the Gospel of John. Source, redaction, and literary analysis to reconstruct the stages of formation and their corresponding theologies. Relation of the Johannine letters to the Gospel. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8317. Letter to the Romans. 3 cr. hrs.
Background and purpose of this letter. Examination of important Pauline themes, issues, and methods of argumentation. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8318. The Corinthian Correspondence. 3 cr. hrs.
Study of I and/or II Corinthians in the context of Paul's pastoral relationship to Corinth. Integrity, background and purpose of the letters. Examination of important themes, issues, and methods of argumentation. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8319. Shorter Pauline Letters. 3 cr. hrs.
Study of one or more of the following letters: Galatians, Philippians, I and II Thessalonians, and Philemon. Background and purpose of these writings. Examination of important Pauline themes, issues, and methods of argumentation. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8320. Colossians and Ephesians. 3 cr. hrs.
Authorship, milieu, and purpose of these letters. Their relationship to one another and to other Pauline traditions. Review of critical issues and examination of theological themes and methods of argumentation. Exegesis of selected passages. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8321. Later New Testament Writings. 3 cr. hrs.
Study of one or more of the following New Testament texts: I and II Timothy; Titus; Hebrews; James; I and II Peter; I, II, and III John; Jude; and Revelation 1-3. Background, purpose, and theology of these writings. Exegesis of key passages. Relationship of these works to selected non-canonical writings. Greek text used. Prereq: REST-PhD student or cons. of dept. ch.

Specialized research on topics or problems within and/or related to the New Testament writings. Greek text used. Prereq: REST-PhD student or THEO 6120 and cons. of dept. ch.

THEO 8410. Ecclesiastical Historiography. 3 cr. hrs.
The interpretation of the history of the Church and of doctrine as seen by ecclesiastical historians from Eusebius to Harnack; their characteristic approaches and concerns. Recent trends in historiography and historical theology. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8411. History of Christian Thought 1: The Age of the Fathers. 3 cr. hrs.
A study of the development of Christian beliefs and doctrines in the patristic age. The following themes are treated: the authority of Scripture and tradition; Father, Word, Spirit, and the divine Triad; the person of Jesus the Christ; sin, redemption and grace; the Church and the sacraments. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8412. History of Christian Thought 2: Byzantine Tradition. 3 cr. hrs.
Survey of Greek theology from Nicea (325 A.D.) to the fall of Constantinople (1453). Particular attention to the most important writers following the Council of Chalcedon, beginning with Dionysius Areopagita and concluding with Gregory Palamas and Nicholas Cabasilas. Focus on the abiding Greek preoccupation with salvation as deification and its contribution to the continuity of Eastern Christian thought. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8413. History of Christian Thought 3: The Middle Ages. 3 cr. hrs.
A study of the development of Christian theology from Augustine to Thomas Aquinas. Includes the following themes: the character and method of theology after Augustine; monastic theology; the early Eucharistic controversies; reason, logic, and the origins of Scholasticism; 12th century humanism and theology; Scholasticism; and Thomism. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8414. History of Christian Thought 4: The Later Middle Ages and the Reformation. 3 cr. hrs.

THEO 8415. History of Christian Thought 5: The Modern Era. 3 cr. hrs.

THEO 8416. History of Christian Thought 6: Theology in America. 3 cr. hrs.
An analysis of developments in American theology from Puritanism to the present. Examines representative theologians of Puritanism, revivalism, enlightenment, progressive orthodoxy, orthodox gospel, modernism, Americanism, and neo-orthodoxy within the context of American political and social movements. Themes considered: the church, grace, religious liberty, church and state, voluntarism, person of Jesus, tradition, adaptation. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8417. The Apostolic Fathers and the Apologists. 3 cr. hrs.
A study of the Christian writings of the 2nd century, especially Clement of Rome, Ignatius of Antioch, the Epistle of Barnabas, the Didache, the Greek apologists, and Irenaeus, with particular attention to their relation to the Old and New Testaments, the doctrine of the Logos, Church order, and the emerging understanding of orthodoxy and heresy. Prereq: REST-PhD student or cons. of dept. ch.; may not be taken for credit by students who have taken the same course as THEO 8415.
THEO 8418. Clement, Origen and the Alexandrian Tradition. 3 cr. hrs.
Against the background of Clement's attempt to incorporate Greek modes of thought into Christianity, an extensive study of Origen as a biblical commentator and the first systematic theologian, with some consideration of the neoplatonic tradition in Christianity, Origen's influence on later theology, and the Origenist controversies. Prereq: REST-PhD student or cons. of dept. ch.; may not be taken for credit by students who have taken the same course as THEO 8417.

THEO 8419. The Greek Fathers of the Fourth Century. 3 cr. hrs.
Reading and study of some of the writings of Athanasius, Basil the Great, Gregory of Nazianzus, Gregory of Nyssa and others, with attention given to the Trinitarian controversies of the 4th century, the councils of Nicea and Constantinople, and the rise and fall of Arianism. Prereq: REST-PhD student or cons. of dept. ch.; may not be taken for credit by students who have taken the same course as THEO 8418.

THEO 8420. History and Theology of the New Testament Canon. 3 cr. hrs.
The Septuagint as the first Christian Bible; authority for religious truth in the Apostolic Fathers and the Apologists; evidence for the liturgical use of Christian writings; the apocryphal New Testament; the canon of four gospels; the collection of the Apostles' letters; lists of canonical books; the beginnings of exegesis; modern theological speculation on the canon. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8421. Augustine of Hippo. 3 cr. hrs.
An intensive study of Augustine's life, writings and thought. Topics include: the influence of neoplatonism on Augustine, the stages of his conversion, the implications of the Donatist controversy for his views on the Church and the sacraments, and the controversy with Pelagius on grace and predestination. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8422. Monastic Theology. 3 cr. hrs.
Proposes a reading of the classical 'canon' of early monastic literature. Beginning with a few sessions devoted to sources, the course moves to the early Syrians, notably Aphrahat of Persia and Ephrem Syrus, and then to the better-known and enormously influential 'Vita Antonii,' the several 'Vitae' of Pachomius, the 'History of the Monks of Egypt,' Basil the Great's 'Longer and Shorter Rules,' Gregory of Nyssa, Evagrius of Pontus, the 'Macarian Homilies,' such early 5th century works as Palladius of Hierapolis' 'Lausiac History,' John Cassian's 'Institutes' and 'Confessions,' 'Theodoret of Cyrillus' 'Historia religiosa,' and the 'Sayings of the Desert Fathers.' Concludes with an examination of Benedict of Nursia's 'Life' (by Gregory the Great) and 'Rule.' Prereq: REST-PhD student or cons. of dept. ch.

THEO 8423. Theology in the Twelfth Century. 3 cr. hrs.
Survey of theology in monasteries and cathedral schools, from the Gregorian Reform to Alan of Lille, including: e.g., Anselm of Canterbury, Peter Abelard, Bernard of Clairvaux, the Victorines, Peter Lombard. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8424. The Theology of Thomas Aquinas. 3 cr. hrs.
The critical reading of the texts of Aquinas in developmental sequence with emphasis on the character of the Summa theologiae. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8425. The Theology of Bonaventure. 3 cr. hrs.
Readings and study of both the academic and the mystical writings of Bonaventure, with special emphasis on the Breviloquium. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8426. The Study of the Bible in the Middle Ages. 3 cr. hrs.
Medieval exegesis from the Carolingian renaissance to the 13th century, with special attention to the relationship between scripture commentaries and systematic theologies; the multiple senses of Scripture in theory and practice; authors include; e.g., Rupert of Deutz, Bernard of Clairvaux, the Victorines, Aquinas and his teachers. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8427. Late Medieval Augustinianism. 3 cr. hrs.

THEO 8428. Interpretation of the Bible in the Renaissance and Reformation. 3 cr. hrs.
Hermeneutical developments from the Victorines. Sources and methods for interpreting historical exegesis. Humanist work on Scripture. The place of the Bible in theology. Luther as doctor of Scripture. Trent and Bible study. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8429. Erasmus. 3 cr. hrs.

THEO 8430. Luther. 3 cr. hrs.

THEO 8431. Calvin. 3 cr. hrs.
Biography and development of his major writings. Systematic construction of the Institutes of the Christian Religion. Calvin on Scripture, sanctification and predestination, and early results in Calvinism. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8432. Council of Trent. 3 cr. hrs.
The positive contribution of Trent to the history of Christian thought. The ‘medieval’ and ‘modern’ character of the council. Trent's understanding of the reformers, and the question of 'Counter-Reformation.' Trent's position on Scripture and tradition, and its justification. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8433. Theological Thought of the Enlightenment and the Nineteenth Century. 3 cr. hrs.

Important theological developments, including movements and thinkers, in both the Catholic and Protestant traditions, in both Europe and America from the beginning of the Modern Era. Possible movements to be covered in this order: Deism, Rational Supernaturalism, Pietism, Romanticism, Speculative Idealism, French Catholic Thought (Traditionalism, Fideism), Oxford Movement, Tubingen School, Protestant Liberalism, Biblical Criticism and Darwinism, Ultramontanism and Neo-Thomism, Roman Catholic Thought and Modernism, Existentialism, and Atheism. Possible figures covered: Herbert of Cherbury, Tillotson, Locke, Toland, Tindal, Voltaire, Wolff, Semler, Reimarus, Lessing, Rousseau, Butler, Hume, Kant, Jacobi, Hamann, Herder, Coleridge, Schleiermacher, Busnelli, Hegel, F. C. Baur, Biedermann, John and Edward Caird, Chateaubriand, Maistre, Lamennais, Bautain, Keble, Newman, Williams, Pusey, Drey, Mohler, Strauss, Feuerbach, Marx, Williams, Goodwin, Jowett, Darwin, Moore, Hodge, Abbott, Ritschl, Herrmann, Harnack, Rauschenbusch, Hodge, Warfield, Leo XIII, Mercier, Garrigou-Lagrange, Olle-Lapprune, Blondel, Labertthonnieres, Loisy, Le Roy, Tyrrell, Kierkegaard, Nietzsche. Not all significant movements and thinkers are covered in one term. Prereq: THEO 6210, THEO 6220, and THEO 6310, or their equiv.’s (i.e., the master’s-level introductory courses), unless the student has passed out of this material on the M.A. Exam.

THEO 8434. Schleiermacher. 3 cr. hrs.

A close reading of the most important theological works of F.D.E. Schleiermacher (1768-1834), the ‘father of modern theology,’ with a view to understanding the basic concepts and historical development of Schleiermacher’s thought within the context of post-Enlightenment European philosophical-theological ideas and movements. Prereq: THEO 6210 and THEO 6220, or their equiv.’s (i.e., the master’s-level introductory courses on the history of theology), unless the student has passed out of this material on the M.A. Exam.

THEO 8435. Images of the Church through the Ages. 3 cr. hrs.

Covers the historical journey of the Christian church as it began and developed through its leading images/symbols/models. Prereq: THEO 6210, THEO 6220, and THEO 6310, or equiv.’s (i.e., the master’s-level introductory courses), unless the student has passed out of this material on the M.A. Exam.

THEO 8436. The Roman Catholic Modernist Crisis. 3 cr. hrs.

Modernist controversies as the explosion of tensions long building between liberalism and orthodoxy, immanentist and extrinsecist religious thought, and tradition and critical history before and after 1900. An interpretation of the episodes in Roman Catholic theology (concerning Loisy, Blondel, von Hugel, Tyrrell) that formed the backdrop to the generation of Vatican II. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8437. Theology of Jonathan Edwards. 3 cr. hrs.

Examines Edwards’ major theological works and analyzes his chief contributions to American theology. Particular focus on Edwards’ understanding of God, original sin, the atonement, freedom, religious experience, true virtue, providence, and the millennium. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8438. Theology in the American Enlightenment. 3 cr. hrs.

Examines how the Enlightenment influenced Christian thought in the United States between 1700 and 1830, paying special attention to the issues raised by critical reason relative to the understanding of revelation, Christ, the supernatural, church and state, and Christians; e.g., the Unitarian W.E. Channing, the Princetonian Presbyterian C. Hodge, and the Catholic J. England. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8439. Theology and Romanticism in the United States. 3 cr. hrs.

Examines representative American Protestant and Catholic theologies that were most directly influenced by Romanticism; e.g., the Transcendentalism of R. W. Emerson and T. Parker, the Progressive Orthodoxy of H. Bushnell, the Mercersbury Theology of W. Nevin and P. Schaff, the Ontologism and moderate traditionalism of O. Brownson and I. Hecker, the Confessionalism of C. P. Krauth. Concentration upon the roles these theologians assigned to revelation, divine immanence in history, church and society, religious intuition, ecclesiastical and confessional authority. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8440. American Catholic Theology. 3 cr. hrs.

A historical examination of the theologies of American Catholics from John Carroll to John Courtney Murray. Analysis of major pastoral and systematic theologians (e.g., John England, Francis P. Kenrick, Orestes Brownson, Isaac Hecker, John Ireland, John A. Ryan, Gustave Weigel) within the context of American and European theological developments. Examination of American Catholic perceptions of Christology, grace, ecclesiology, church-state relations, social thought, the Bible, and modern sciences with a focus upon the relationship of religion and republicanism. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8441. The Social Gospel in American Theologies. 3 cr. hrs.

Examinations of the social thought of representative American Protestants and Catholics of the late 19th and early 20th centuries, concentrating upon the various perceptions of Christianity’s relationship to the social and economic problems of the day. Analysis of the works of Washington Gladden, Richard Ely, Josiah Strong, Walter Rauschenbusch, Edward McGlynn, John A. Ryan, Paul H. Furfey, Dorothy Day, and Virgil Michel. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8442. Dionysius the Areopagite: Father of Mysticism?. 3 cr. hrs.

Intended to be primarily a close reading of (Pseudo-) Dionysius the Areopagite (ca. 500), whose small corpus of works profoundly influenced subsequent Christian thought. Analyzes his background, his treatises and ‘epistles,’ noting his sources and parallels in preceding and contemporary Christian, pagan Neoplatonist, and Jewish mystical literature. Also traces out the Dionysian ‘trajectory’ in selected later Eastern Christian writers. Prereq: THEO 6210 and cons. of dept. ch.
THEO 8443. Symeon the New Theologian-Sources and Heirs. 3 cr. hrs.
Examines Symeon the New Theologian (949-1022), the most striking and attractive of the Byzantine spiritual writers, who too often is treated somewhat in isolation from the sources and currents which feed him. Begins with 5th century writers such as Diadochus of Photiki and Mark the Monk, runs through Dionysius, Maximus, and John of the Ladder in the 6th-7th centuries (possibly including the 'Gaza School' and Palestinian monasticism), and continues through Symeon, to the Hesychasts of the 14th and 15th centuries, notably Gregory of Sinai and Gregory Palamas. Prereq: THEO 6210 and cons. of dept. ch.

THEO 8444. PreNicene Ascetical and Mystical Literature. 3 cr. hrs.

THEO 8445. The Development of Roman Catholic Theology from the Enlightenment to the Present. 3 cr. hrs.
Focuses on the historical development of Roman Catholic theology from the Enlightenment to the present. Treats movements such as French Romanticism, Gallicanism, Ultramontanism, Newmanism, Modernism, New Theology and Transcendental Thomism, Vatican II and post-Vatican II developments. Treats the thought of selected Roman Catholic theologians. In the 19th century: French theologians Chateaubriand, de Maistre, Lamennais, Bautain; the Tubingen theologians (e.g., Drey, Mohler); Newman and the Oxford Movement; the New Apologetics (e.g., Blondel, Labertthoniere); the 'Modernists' (e.g., Loisy, Tyrrell). In the 20th century: New Theology and Transcendental Thomism (e.g., Rousselot, Marechal, de Lubac, Karl Rahner, Lonergan, Schillebeeckx); Liturgical Movement (e.g., Jungmann, Casel, Dix); Vatican II and aggiornamento (e.g., Congar, Kung, Courtney Murray, Balthasar, Ratzinger); Political and Liberation Theologies (e.g., Metz, Gutierrez, Segundo, Leonard Boff); Feminist Theology (e.g., Schussler Fiorenza, Radford Ruether, Pilar Aquino). Prereq: THEO 6210, THEO 6220, and THEO 6310, or equiv.'s (i.e., the master's-level introductory courses), unless the student has passed out of this material on the M.A. Exam.

THEO 8446. History of Christian Theology in the Twentieth Century. 3 cr. hrs.
Possible schools/movements and figures to be covered: Eschatological school (J. Weiss, Schweitzer), Religionsgeschichtliche Schule (Trottsch), American Empiricism and Naturalism (William James, D.C. Macintosh, Dewey, Wieman), Dialectical Theology (Barth, Brunner, Gothgen, Bonhoeffer), Christian Existentialism (Marcel, Tillich, Bultmann), Christian Realism (H.R. Niebuhr, Reinhold Niebuhr), the Nouvelle Theologie and Transcendental Thomism (Rousselot, Marechal, de Lubac, K. Rahner, Lonergan, Schillebeeckx), Vatican II and renewed Roman Catholic Theology (Congar, John XXIII, Kung, John Courtney Murray, Balthasar, Ratzinger), Political Theology and Liberation Theologies (Metz, Moltmann, Gutierrez, Segundo, L. Boff, Sobrino). Not all of these movements and figures are covered in one term. Prereq: THEO 6210, THEO 6220, and THEO 6310, or equiv.'s (i.e., the master's-level introductory courses), unless the student has passed out of this material on the M.A. Exam.

THEO 8450. Special Questions in the History of Christian Thought: 3 cr. hrs.
Specialized research in one area or problem in the history of Christian thought. Specific topic(s) announced. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8510. Christian Anthropology. 3 cr. hrs.
Different concepts of anthropology today. The central interest in anthropology in different fields, including philosophy and theology, in the last 50 years. The relationship between anthropology, theology, Christology. Human existence according to the Old and New Testaments. The realties of history, world, and freedom as related to meaning in human existence. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8511. Atheism and Theism. 3 cr. hrs.
Exploration of the basic theistic and atheistic options regarding the ultimate meaning and value of human life. Socio-cultural and religious roots of these options. Criteria of truth for determining validity. Examination of representative writings, classical and modern, which discuss these options. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8512. God in Contemporary Theology. 3 cr. hrs.
Nineteenth and 20th century roots (philosophical, social, and religious) of present understandings of God. Classical and contemporary discussion of the nature and validity of theistic language. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8513. The Structure of Religious Experience. 3 cr. hrs.
Analysis of the structure of religious experience and related phenomena as explored through a variety of perspectives, such as philosophy, sociology, psychology, and theology. The nature and function of religion in human life in relation to the individual and social development of the human being. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8514. Hermeneutic Theory and Theological Method. 3 cr. hrs.

THEO 8515. Philosophy as Source and Resource for Theology. 3 cr. hrs.
Critical examination of philosophical texts which have played an important role in framing theological questions and discussions; of representative theological texts for how philosophical issues and presuppositions bear on their interpretation; of representative accounts (historical and contemporary) of the relationship between theology and philosophy. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8516. The Trinity. 3 cr. hrs.
Historical and systematic presentation of the doctrine of the Trinity. The development of this doctrine in early Christian history. The notions of substance, person, procession, relation, and communion as they occur in patristic tradition and in later Scholastic theology. Other approaches to this doctrine in the light of contemporary philosophy and theology. Role of this doctrine in contemporary Christian experience. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8517. Christology. 3 cr. hrs.
Historical and systematic presentation of the doctrine of the Incarnation. Christ, the Mediator between God and humanity, as the fullness of all revelation. Christology in the New Testament. The development of the doctrine of the Incarnation in the Christian church with special attention given to the councils of Ephesus and Chalcedon, Scholastic theology, and contemporary approaches to the mystery of Jesus. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8518. Soteriology. 3 cr. hrs.
Specific redemptive function of Jesus Christ and then of the Christian community, the sacraments and the world in which one lives. Grace and human development. Salvation as a personal and societal reality; redemption of the social order. Salvation of the nonbeliever, in particular the relationship between salvation and revelation. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8519. Ecclesiology. 3 cr. hrs.

THEO 8520. Theology of Christian Liturgy. 3 cr. hrs.
A systematic study of the Church at prayer in Trinitarian and ecumenical perspectives. The Church's faith in God's saving action through its own ritual self-offering seen in light of human sciences, phenomenology and Christian doctrine. Liturgy examined as symbolic communication, as actualization of Christian community, and in its relationship to the rest of Christian life and theology. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8521. Christian Eschatology. 3 cr. hrs.
Analysis of Biblical and historical forms of Christian eschatology. Comparison of Christian perspectives with cyclic approaches to history and apocalyptic approaches to the end of history. The centrality of eternal life to the Christian message of the Kingdom of God. Resurrection as the principal locus of Christian expectations. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8522. Major Figures in Modern Theology. 3 cr. hrs.
Intensive examination of the writings of a thinker who has had a significant impact on theology within the last hundred years. Focuses on the primary texts of a particular theologian or school of thought. Also assesses their contribution to theology and the life of the Church and examines critical evaluations. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8523. Doctrinal Themes in Contemporary Protestant Systematic Theology. 3 cr. hrs.
Analysis and evaluation of important contemporary Protestant systematic theologians in terms of a single theme or related set of themes to be chosen by the instructor. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8524. Doctrinal Themes in Contemporary Roman Catholic Systematic Theology. 3 cr. hrs.
Analysis and evaluation of important contemporary Roman Catholic systematic theologians in terms of a single theme or related set of themes to be chosen by the instructor. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8525. Theological Method: Interdisciplinary Implications. 3 cr. hrs.
Exploration of methodological interrelations between theology and other academic disciplines in terms of a single theme or related set of themes to be chosen by the instructor. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8526. Fundamental Themes in the Theology of Bernard Lonergan. 3 cr. hrs.
Study of major texts of Bernard Lonergan. Themes vary: grace, Trinity, Christology, method. Also considers developments by other authors. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8527. Fundamental Themes in the Theology of Karl Rahner. 3 cr. hrs.
Intensive examination of major themes and texts in Karl Rahner's writings. Focuses on the primary texts, assesses their contribution to theology and the life of the Church and examines critical evaluations. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8528. Theology of Karl Barth. 3 cr. hrs.
An examination of Karl Barth's major texts, primarily, but not exclusively, his Church Dogmatics. Themes may include his Christology, method, moral theology and/or political theology. An examination of his relation to those who came before him, those against whom he reacted, as well as those who developed his thought in the 20th and 21st century. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8529. Nouvelle Theologie. 3 cr. hrs.
A study of the theological movement of the 20th century known as 'la nouvelle théologie' or 'ressourcement' that reacted to neo-scholasticism and sought to reunify theology through a reappropriation of the sources - the liturgy, Scriptures, and the Early Church Fathers. Representative figures include Henri de Lubac, Jean Daniélou, Henri Bouillard, Yves Congar, Louis Bouyer, Marie-Dominique Chenu, and Hans Urs von Balthasar. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8530. Theology of the Holy Spirit. 3 cr. hrs.
An examination of the biblical, historical and systematic aspects of pneumatology. Attention given to the Holy Spirit and the doctrine of the Trinity with consideration of the ecumenical implications of the Filioque, the Spirit in creation and redemption, the mission of the Holy Spirit relative to that of the Son, and the importance of pneumatology for the entire spectrum of Christian doctrine. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8531. Theology of Grace. 3 cr. hrs.
An examination of the doctrine of grace in its historical developments and in contemporary systematic theology. Attention given to the following: nature and grace, distinctions in the types and modalities of grace, grace and human freedom/predestination, justification and sanctification, grace in the church and the world. Also includes consideration of ecumenical convergences and/or divergences (Catholic and Protestant, Eastern and Western Churches). Prereq: REST-PhD student or cons. of dept. ch.

THEO 8532. Ecumenism. 3 cr. hrs.
A study of ecumenism, the efforts of the Christian churches to restore unity, ecumenical principles, the nature, goal and reception of dialogues, major Catholic encyclicals and directives on ecumenism, and significant recent ecumenical agreements between churches. An assessment of the points of ecumenical convergence and remaining differences on select doctrinal topics involving the Catholic Church. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8533. Christians and Muslims in Dialogue. 3 cr. hrs.
A survey of the efforts made to advance Muslim-Christian relations. An examination of joint declarations issued by formal dialogues as well as select individual contributions of Muslim and Christian scholars. Primary attention to those dialogues sponsored by the sub-unit on Dialogue with Peoples of Living Faiths of the World Council of Churches, and the Pontifical Council of Interreligious Dialogue. Includes dialogues co-sponsored and/or organized by Muslim organizations. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8534. Fundamental Theology. 3 cr. hrs.
A historical and systematic study of the fundamentals of theology: faith, revelation, tradition, and Church. Attention given to: faith as the response to revelation, the connection between faith and reason, revelation as God's self-communication, the relationship between scripture and tradition, and the role of the magisterium in preserving and interpreting sacred scripture and tradition. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8535. Public Theology in Postmodern Context. 3 cr. hrs.
The interpretation and application of the gospel to a given cultural context in the light of Scripture and Tradition. Not identical with the normative reflections of social ethics nor assuming the narratives of liberation and political theology, public theology focuses on public issues for the sake of the churches and on Christian meanings for the sake of the public square and the common good. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8536. Theology of Hans Urs von Balthasar. 3 cr. hrs.
Study of the major texts of Hans Urs von Balthasar, with special attention given to his trilogy. Possible themes include: Balthasar's elucidation of beauty as essential to theological discourse, Balthasar's efforts to reunite theology and spirituality through the fundamental connection between holiness and the theological enterprise, and Balthasar's Christological and Trinitarian theological method. A consideration of Balthasar's contribution to theology today. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8537. Theology of Jürgen Moltmann. 3 cr. hrs.
An examination of the theology of Jürgen Moltmann, both in its development and in its major themes. An emphasis on the close connection between theology and practice in Moltmann and the way his work represents a specific understanding of the task of theology. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8538. African Christianity. 3 cr. hrs.
An introduction to the key components, characteristics, and features of Christian theologizing in Africa. Further studies other relevant aspects of African theology, including religion and politics, comparative and applied ethics, the places of other African religions (especially traditional religions), and the contributions of African Christianity to global Christianity. Prereq: Admitted to REST-Ph.D. program or cons. of dept. ch.

THEO 8539. World Christianity. 3 cr. hrs.
An introduction to Christianity in the contemporary global context. Addresses the dynamism of Christianity's ongoing expansion, commonalities and differences in its expression, and the impact of its disparate contexts and situations on the mutual influence between Christianity and its neighboring world religions and cultures. Prereq: Admitted to REST-Ph.D. program or cons. of dept. ch.

THEO 8540. Interfacing Theology and the Natural Sciences. 3 cr. hrs.
Ways in which theology and the natural sciences (e.g., physics, biology, and geology) have been related historically provide the perspective from which to examine current efforts to reflect on God, the world and humanity in a scientific age. Basic scientific facts and established theories inform theological discourse, and scientists are consulted for more in-depth understanding. Methods for teaching constructive relationship of the disciplines are explored and demonstrated by students. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8550. Special Questions in Systematic Theology. 3 cr. hrs.
Specialized research in one area or problem in systematic theology. Specific topic(s) announced. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8610. Moral Theology: The Catholic Tradition. 3 cr. hrs.
General outlines of the development and exposition of Catholic moral theology through an examination of historical studies of Christian Ethics written in the 20th century and of selected original texts. Moral teaching in early Christianity; development of systems of moral teaching; the history of casuistry; moral theology as a separate theological discipline; the understanding of the love commandment as found in different periods. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8611. The Protestant Tradition in Christian Ethics. 3 cr. hrs.
Study of selected writings of the Reformers on ethical subjects and of selected ethical writings from important Protestant schools of theology. Representatives of sectarian Protestant thought on ethical topics. Contemporary developments in Christian ethics found in the writings of outstanding Protestant thinkers in this century. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8612. Basic Issues in Christian Social Ethics. 3 cr. hrs.
Social teaching of the Christian churches. A systematic treatment of issues such as the relation between love and justice. The teachings of the Christian churches on matters such as war and peace; the rights and duties of states and citizens; the rights, duties, and obligations of members of a family; the rights, duties, and obligations of parents with respect to their children. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8613. Method in Theological Ethics. 3 cr. hrs.
Exploration of contemporary developments in methodological approaches to theological ethics. Particular attention to the theological nature of methodology as well as the interrelationship between other academic disciplines and the formation of method in theological ethics. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8614. Health Care Ethics. 3 cr. hrs.
Exploration of theological perspectives on medicine. Particular attention to thinking on health care within the Catholic tradition, as well as developments across the Christian tradition. Emphasis on theological methodology as well as engagement with select ethical issues in medicine. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8615. Body, Gender and Sexuality. 3 cr. hrs.
Analysis of how the human person's being a body directs our thinking in Christian theology. Human bodies as essential to what humans are, as both a possible limit on humans and an occasion of transcendence. The body as a source of thinking about persons and how they should act. The nature of sexual differentiation and of gender and implications for Christian anthropology and ethics. Human sexuality and its influence on individuals and communities. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8616. Theology and Economics. 3 cr. hrs.
A theological evaluation of economic theories and practices, particularly as they bear on the rise and ascendancy of the global market. Includes a history of economic thought with particular attention to moral theory. The tradition of economic thought within Christian theology. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8617. Catholic Social Thought. 3 cr. hrs.
A comprehensive examination of the engagement of Catholic faith with the public square. Detailed analysis of fundamental themes within the Catholic Social Teaching tradition through a study of the documents of the papal encyclical tradition, social thought originating from and upon the U.S. context, and the various interpretations of the Catholic Social Teaching tradition. Consideration of Catholic socio-ethical engagement with emerging concerns in public discourse. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8618. Liberation Ethics and the Option for the Poor. 3 cr. hrs.
An exploration of the ethical dimensions of liberationist theological reflection, addressing the contributions and challenges to Christian moral discourse, analysis, and reflection, which emerge from the theologies of liberation and their stance of solidarity with the victims of injustice. Attention given to both the commonality and diversity present in this theological movement. Consideration of the implications of the option for the poor for ethical reflection and action. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8619. Theology, Technology and Ethics. 3 cr. hrs.
Provides an historical overview of theological discourse on technology, considers effects of current technologies (e.g., biotechnology, social communications, artificial intelligence, energy and transportation), addresses ethical principles pertaining to their research, development, deployment and use from the perspective of Catholic and other Christian traditions, and explores and demonstrates effective methods for teaching this interdisciplinary subject. May include the views of other world religions. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8620. Theology of Creation and Ethics. 3 cr. hrs.
Explores how the theological traditions of Christianity, Judaism and Islam recognize as moral problems the loss of biological diversity, degradation of ecological systems and threats to the biosphere caused by human actions. Critically examines contemporary theological efforts (e.g., reconstructionist and eco-feminist) to address these problems. Develops effective approaches to teaching at the undergraduate level. The traditions and perspectives of other world religions (e.g., Hinduism, Jainism and Buddhism) may be included. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8621. Virtue Ethics. 3 cr. hrs.
Covers a range of topics in contemporary reappropriations of virtue ethics, with brief historical background. Includes fundamental virtue theory (Aristotle, Aquinas, MacIntryre's After Virtue); contemporary contributions to virtue approaches (e.g., biblical virtue ethics, virtue and limits to moral agency) and applied virtue ethics. Both Protestant and Catholic approaches are treated at length. Prereq: Admitted to REST-Ph.D. program or cons. of dept. ch.

THEO 8622. Freedom, Sin and Conscience. 3 cr. hrs.
Explores the Christian understanding of the role of freedom in the moral life, paying particular attention to the role of sin in restricting freedom. Examines the theology of conscience and its primacy in theological ethics. Covers controversies emerging from the practical interaction of freedom, sin, and conscience, including the dangers of erroneous conscience, the prospects of collective conscience and the notion of social/structural sin. Prereq: Admitted to REST-Ph.D. program or cons. of dept. ch.

THEO 8650. Special Questions in Moral Theology. 3 cr. hrs.
Specialized research in one area or problem in moral theology. Specific topic(s) announced. Prereq: REST-PhD student or cons. of dept. ch.
THEO 8710. Special Questions in Interdisciplinary Studies. 3 cr. hrs.
Specialized research in one area or problem in interdisciplinary studies. Specific topic(s) announced. Prereq: REST-PhD student or cons. of dept. ch.

THEO 8711. Teaching Theology at the College Level. 0 cr. hrs.
Explores effective means of teaching theology and religion in a liberal arts college setting. Addresses pedagogical techniques, learning styles, course design and assessment. Provides opportunities for new instructors to develop their communication and course management skills and to receive feedback from their students and faculty mentors. S/U grade assessment. Prereq: Admitted to REST-Ph.D. program or cons. of dept. ch.

THEO 8995. Independent Study in Theology. 1-3 cr. hrs.
Prereq: Cons. of dept. ch.; cons. of graduate prog. dir.

THEO 8999. Doctoral Dissertation. 1-12 cr. hrs.
S/U grade assessment. Prereq: Cons. of dept. ch.

THEO 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9974. Graduate Fellowship: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9975. Graduate Assistant Teaching: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9976. Graduate Assistant Research: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9984. Master’s Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9985. Master’s Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9986. Master’s Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9987. Doctoral Comprehensive Examination Preparation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9988. Doctoral Comprehensive Examination Preparation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9989. Doctoral Comprehensive Examination Preparation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9994. Master’s Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9995. Master’s Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9996. Master’s Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9997. Doctoral Dissertation Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9998. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.

THEO 9999. Doctoral Dissertation Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of dept. ch.
Transfusion Medicine (TRME)

Program Director: Susan T. Johnson, MSTM, MT(ASCP)SBBCM

Transfusion Medicine website (https://www.marquette.edu/grad/programs-transfusion-medicine.php)

Degree Offered

Master of Science in Transfusion Medicine, students are admitted under Plan B (non-thesis option) but Plan A (thesis option) may be requested.

Program Description

The transfusion medicine program is a collaboration between Marquette University and Versiti Blood Center of Wisconsin. The first 18 credits must be completed at Versiti within two and a half years of starting the program. Additional credits are completed exclusively at Marquette University.

Students must be enrolled in the Specialist in Blood Banking (SBB) program at Versiti Blood Center of Wisconsin (http://www.bcw.edu/bcw/medical-services-blood-products/education-programs/sbb-program/), Versiti's independent course of study, in order to be eligible to apply for the master of science program in transfusion medicine at Marquette University. No exceptions are made to this requirement. Students have the option to enroll at Marquette if it does not interfere with course work at Versiti.

Visit the department Web page (https://www.bcw.edu/bcw/medical-services-blood-products/education-programs/sbb-program/) for more detailed program information.

Application Deadlines

Applications to the SBB program at Versiti Blood Center of Wisconsin for the fall term are accepted from January 1 to March 31 each year. Applications from students already enrolled in the SBB program to the transfusion medicine program at Marquette University are accepted on a rolling basis, following Graduate School deadlines each term for having completed application files and for financial aid.

Application Requirements

Applicants must submit, directly to the Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml/).
2. Copies of all college/university transcripts except Marquette.¹
3. Three letters of recommendation.
4. A list of continuing education for the last two years.
5. A letter of intent stating reasons for applying to this program and how SBB certification will impact their professional life and further their career.
6. (For international applicants only) laboratory training records.
7. (For international applicants only) GRE scores.
8. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

¹ Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

Transfusion Medicine Master's Requirements

Specializations: Business Administration, Education, Science

For Plan B (non-thesis option – default), students must complete 39, 40 or 40.5 total graduate-level credit hours depending on specialization. Students must complete 18 credit hours in transfusion medicine (TRME) courses, credit hours in specialization courses (19.5 credit hours in business administration, 18 credit hours in education, or 18 or 19 credit hours in science), plus 3 capstone essay credit hours. Students must also participate in the department colloquium for no credit. When the 18 TRME credits are completed at the BloodCenter, the student is required to take a national examination.

Students may request Plan A (thesis option) after admission and, if selected, should secure co-direction on their thesis from a member of their specialization faculty.

Core Courses

TRME students are required to take the following courses (18 credits), participate in the department colloquium (no credit), complete a capstone (3 credits), for a total of 21 TRME credits. Students must also fulfill the requirements for one of the three specializations of business administration, education or science.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>TRME 6101</td>
<td>Introduction to Transfusion Medicine</td>
<td>1</td>
</tr>
<tr>
<td>TRME 6201</td>
<td>Immunohematology 1</td>
<td>2</td>
</tr>
<tr>
<td>TRME 6202</td>
<td>Immunohematology 2</td>
<td>2</td>
</tr>
<tr>
<td>TRME 6220</td>
<td>Essentials of Blood Collection and Testing</td>
<td>3</td>
</tr>
<tr>
<td>TRME 6301</td>
<td>Management and Education in Transfusion Medicine</td>
<td>3</td>
</tr>
<tr>
<td>TRME 6401</td>
<td>Anemias and Related Topics</td>
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<tr>
<td>TRME 6402</td>
<td>Hemostasis and Transplantation</td>
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<td>TRME 6501</td>
<td>Pathophysiology in Transfusion Medicine</td>
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<tr>
<td>TRME 6998</td>
<td>Transfusion Medicine Project</td>
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<td>TRME 6952</td>
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<tr>
<td>TRME 6997</td>
<td>Transfusion Medicine Capstone</td>
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**Total Credit Hours** 21

### Specialization Requirements

#### Business Administration

Students are required to take three core courses, four electives, and must meet all prerequisite requirements for the master of business administration classes. Students must also select an area of study from the following: organizational management, operations and supply chain management, accounting and finance, marketing, management information systems or general business. Those students who have academic backgrounds sufficient to waive any of the required courses are allowed to complete additional elective course work.

The required business administration courses ensure a fundamental understanding of the basics of accounting, human resources and organizational issues in the work place. In addition, the environmental influences courses place a strong emphasis on Marquette’s traditional focus on societal concerns and the social responsibilities of today’s working professional.

**Required Business Administration Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>MBA 6020</td>
<td>Business Essentials: Accounting, Economics and Finance</td>
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<tr>
<td>MBA 6030</td>
<td>Business Essentials: Marketing, IT and Operations and Supply Chain</td>
<td>4.5</td>
</tr>
<tr>
<td>MBA 6120</td>
<td>Concepts for Ethical Business Practice</td>
<td>1.5</td>
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<tr>
<td>or MBA 6130</td>
<td>Corporate Social Responsibility</td>
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**Elective Courses for each Business Administration Specialization**

At least three courses must be completed within a student's area of study from the classes listed below. Note required and elective lists within each area.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HURE 5140</td>
<td>International Human Resources Management</td>
<td>3</td>
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<tr>
<td>or MANA 6140</td>
<td>International Management</td>
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**Total Credit Hours** 19.5

### Organizational Management

#### Required Courses

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>MBA 6020</td>
<td>Business Essentials: Accounting, Economics and Finance</td>
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<tr>
<td>MBA 6030</td>
<td>Business Essentials: Marketing, IT and Operations and Supply Chain</td>
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</tr>
<tr>
<td>MBA 6120</td>
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<td>1.5</td>
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<tr>
<td>or MBA 6130</td>
<td>Corporate Social Responsibility</td>
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**HURE 5140**

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<tr>
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<tr>
<td>HURE 5003</td>
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<tr>
<td>HURE 5010</td>
<td>Strategic Compensation and Rewards</td>
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<tr>
<td>HURE 5080</td>
<td>Talent Development</td>
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<tr>
<td>HURE 6170</td>
<td>Managing Human Capital</td>
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</tr>
<tr>
<td>HURE 6535</td>
<td>Diversity and Inclusion in Global Organizations</td>
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<tr>
<td>HURE 6931</td>
<td>Topics in Human Resource Management</td>
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</tr>
<tr>
<td>LEDR 6051</td>
<td>Contemporary Leadership: Theory, Research and Application</td>
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</tr>
<tr>
<td>LEDR 6101</td>
<td>Strategic Communication</td>
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</tr>
<tr>
<td>LEDR 6110</td>
<td>Managing Behavior in Organizations</td>
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</tr>
<tr>
<td>LEDR 6115</td>
<td>Character Driven Leadership</td>
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**Elective Courses** 6
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>LEDR 6125</td>
<td>Negotiations</td>
</tr>
<tr>
<td>LEDR 6215</td>
<td>Change Leadership</td>
</tr>
<tr>
<td>LEDR 6931</td>
<td>Topics in Leadership Studies</td>
</tr>
<tr>
<td>LEDR 6995</td>
<td>Independent Study in Leadership Studies</td>
</tr>
<tr>
<td>MANA 6110</td>
<td>Managing Behavior in Organizations</td>
</tr>
<tr>
<td>MANA 6115</td>
<td>Change Leadership in Self and Organizations</td>
</tr>
<tr>
<td>MANA 6125</td>
<td>Negotiations</td>
</tr>
<tr>
<td>MANA 6140</td>
<td>International Management</td>
</tr>
<tr>
<td>MANA 6931</td>
<td>Topics in Management</td>
</tr>
<tr>
<td>MANA 6953</td>
<td>Seminar in Management</td>
</tr>
<tr>
<td>MANA 6995</td>
<td>Independent Study in Management</td>
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</table>

**Total Credit Hours**: 19.5

### Operations and Supply Chain Management

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>MBA 6020</td>
<td>Business Essentials: Accounting, Economics and Finance</td>
</tr>
<tr>
<td>MBA 6030</td>
<td>Business Essentials: Marketing, IT and Operations and Supply Chain</td>
</tr>
<tr>
<td>MBA 6120</td>
<td>Concepts for Ethical Business Practice</td>
</tr>
<tr>
<td>or MBA 6130</td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>OSCM 6200</td>
<td>Operations and Supply Chain Management</td>
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</table>

**Elective Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>OSCM 6110</td>
<td>Manufacturing Management</td>
</tr>
<tr>
<td>OSCM 6115</td>
<td>Service Operations Management</td>
</tr>
<tr>
<td>OSCM 6120</td>
<td>Quality and Process Management</td>
</tr>
<tr>
<td>OSCM 6125</td>
<td>Purchasing and Supply Management</td>
</tr>
<tr>
<td>OSCM 6140</td>
<td>Globalization and Global Operations</td>
</tr>
<tr>
<td>OSCM 6151</td>
<td>Enterprise Systems in Supply Chain Management</td>
</tr>
<tr>
<td>OSCM 6931</td>
<td>Topics in Operations and Supply Chain Management</td>
</tr>
<tr>
<td>OSCM 6953</td>
<td>Seminar in Operations and Supply Chain Management</td>
</tr>
<tr>
<td>OSCM 6995</td>
<td>Independent Study in Operations and Supply Chain Management</td>
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</tbody>
</table>

**Total Credit Hours**: 19.5

### Accounting and Finance

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MBA 6020</td>
<td>Business Essentials: Accounting, Economics and Finance</td>
</tr>
<tr>
<td>MBA 6030</td>
<td>Business Essentials: Marketing, IT and Operations and Supply Chain</td>
</tr>
<tr>
<td>MBA 6120</td>
<td>Concepts for Ethical Business Practice</td>
</tr>
<tr>
<td>or MBA 6130</td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>ACCO 6200</td>
<td>Managerial Accounting for Decision Making</td>
</tr>
<tr>
<td>FINA 6200</td>
<td>Advanced Financial Management</td>
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**Elective Courses**

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<th>Course Code</th>
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<tbody>
<tr>
<td>ACCO 6180</td>
<td>Financial Statement Analysis</td>
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<td>ENTP 6180</td>
<td>Entrepreneurial Finance</td>
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<td>FINA 5931</td>
<td>Topics in Finance</td>
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<td>FINA 6081</td>
<td>Investment Banking</td>
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<td>FINA 6111</td>
<td>Investments</td>
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<td>FINA 6130</td>
<td>Bank Management</td>
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<tr>
<td>FINA 6140</td>
<td>International Financial Management</td>
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<tr>
<td>FINA 6163</td>
<td>Real Estate Finance and Investments</td>
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<tr>
<td>FINA 6165</td>
<td>Fixed Income Markets and Securities</td>
</tr>
<tr>
<td>FINA 6170</td>
<td>Investment Management, Ethics and Society</td>
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<tr>
<td>FINA 6931</td>
<td>Topics in Finance</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
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<tr>
<td>FINA 6953</td>
<td>Seminar in Finance</td>
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<td>FINA 6995</td>
<td>Independent Study in Finance</td>
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**Total Credit Hours**: 19.5

### Marketing

#### Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MBA 6020</td>
<td>Business Essentials: Accounting, Economics and Finance</td>
<td>4.5</td>
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<tr>
<td>MBA 6030</td>
<td>Business Essentials: Marketing, IT and Operations and Supply Chain</td>
<td>4.5</td>
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<tr>
<td>MBA 6120</td>
<td>Concepts for Ethical Business Practice</td>
<td>1.5</td>
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<tr>
<td>or MBA 6130</td>
<td>Corporate Social Responsibility</td>
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</tr>
<tr>
<td>MARK 6200</td>
<td>Marketing for Management Decision Making</td>
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#### Elective Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MARK 6110</td>
<td>Consumer Behavior</td>
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<td>MARK 6120</td>
<td>Integrated Marketing Communications</td>
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<td>MARK 6125</td>
<td>Digital Marketing</td>
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<tr>
<td>MARK 6130</td>
<td>Customer Relationship Management</td>
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<tr>
<td>MARK 6136</td>
<td>Sales Management</td>
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<td>MARK 6140</td>
<td>Global Marketing Strategy</td>
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<td>MARK 6160</td>
<td>Marketing Research</td>
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<td>MARK 6165</td>
<td>Marketing Analytics</td>
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<tr>
<td>MARK 6170</td>
<td>Marketing Ethics, Markets and Social Responsibility</td>
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<tr>
<td>MARK 6175</td>
<td>Marketing and Social Entrepreneurship</td>
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<tr>
<td>MARK 6185</td>
<td>Brand Management</td>
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<tr>
<td>MARK 6931</td>
<td>Topics in Marketing</td>
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<tr>
<td>MARK 6953</td>
<td>Seminar in Marketing</td>
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<td>MARK 6995</td>
<td>Independent Study in Marketing</td>
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**Total Credit Hours**: 19.5

### Management Information Systems

#### Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MBA 6020</td>
<td>Business Essentials: Accounting, Economics and Finance</td>
<td>4.5</td>
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<tr>
<td>MBA 6030</td>
<td>Business Essentials: Marketing, IT and Operations and Supply Chain</td>
<td>4.5</td>
</tr>
<tr>
<td>MBA 6120</td>
<td>Concepts for Ethical Business Practice</td>
<td>1.5</td>
</tr>
<tr>
<td>or MBA 6130</td>
<td>Corporate Social Responsibility</td>
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</tr>
<tr>
<td>INSY 6200</td>
<td>Digital Innovation Strategies</td>
<td>3</td>
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<tr>
<td>or INSY 5931</td>
<td>Topics in Information Systems</td>
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#### Elective Courses

<table>
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<tr>
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<tbody>
<tr>
<td>INSY 6153</td>
<td>Project Management</td>
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<tr>
<td>INSY 6156</td>
<td>Privacy and Security</td>
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<td>INSY 6157</td>
<td>Global Information Systems Outsourcing</td>
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<tr>
<td>INSY 6158</td>
<td>Systems Analysis and Design</td>
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</tr>
<tr>
<td>INSY 6931</td>
<td>Topics in Information Systems</td>
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<tr>
<td>INSY 6953</td>
<td>Seminar in Information Systems</td>
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<tr>
<td>INSY 6995</td>
<td>Independent Study in Information Systems</td>
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**Total Credit Hours**: 19.5

### General Business

#### Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>MBA 6020</td>
<td>Business Essentials: Accounting, Economics and Finance</td>
<td>4.5</td>
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<tr>
<td>MBA 6030</td>
<td>Business Essentials: Marketing, IT and Operations and Supply Chain</td>
<td>4.5</td>
</tr>
<tr>
<td>MBA 6120</td>
<td>Concepts for Ethical Business Practice</td>
<td>1.5</td>
</tr>
<tr>
<td>or MBA 6130</td>
<td>Corporate Social Responsibility</td>
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</table>
ACCO 6200  Managerial Accounting for Decision Making  3  
or FINA 6200  Advanced Financial Management

**Elective Courses**  
ACCO 6200  Managerial Accounting for Decision Making  
FINA 6200  Advanced Financial Management  
INSY 6200  Digital Innovation Strategies  
MARK 6200  Marketing for Management Decision Making  
OSCM 6200  Operations and Supply Chain Management  

For 3 of the 6 elective credit hours, students may choose two 1.5-credit courses from:

MBA 6140  Leading People and Change  
MBA 6150  Leading Innovation and Creativity  
MBA 6160  Leadership Coaching and Development  

**Total Credit Hours**  
19.5

**Education**

Students in this specialization are required to take three core courses and three electives. Those students who have academic backgrounds sufficient to waive any of the required courses are allowed to complete additional elective course work.

**Required Courses**  
COUN 6050  Research Methods in Counseling  
or EDPL 6000  Introduction to Educational Inquiry  
EDPL 6445  Learning and Curriculum Theories  
EDPL 6450  Theories of Learning Applied to Instruction  

**Elective Courses**  
COPS 8310  Intermediate Research and Statistics  
COPS 8320  Measurement and Evaluation (COPS 8310 is a prerequisite for COPS 8320)  
EDPL 6140  Diversity, Identity and the Student Affairs Professional  
EDPL 6200  Student Development in Higher Education  
EDPL 6210  Environmental Theory Assessment in Higher Education  
EDPL 6260  Organizational Theory and Administration in Higher Education  
EDPL 6800  American Law and the Educational Organization  
EDPL 6860  Instructional Leadership  
EDPL 6870  Curriculum Leadership  
EDUC 6040  Introduction to Learning and Assessment  

**Total Credit Hours**  
18

**Science**

Students in this specialization are required to take three core courses and 9-10 credits of electives. Those students who have academic backgrounds sufficient to waive any of the required courses are allowed to complete additional elective course work.

**Required Courses**  
BIOL 5806  Immunobiology  
BIOL 6011  Advanced Concepts in Genetics and Cell Biology  
BIOL 6012  Advanced Concepts in Cell Biology and Biochemistry  

**Elective Courses**  
BIOL 8101  Protein Structure and Function  
BIOL 8102  Biochemistry and Function of Nucleic Acids  
BIOL 8201  Epigenetics  
BIOL 8202  Principles of Eukaryotic Genetics  
BIOL 8301  Imaging and Cytoskeletons  
BIOL 8302  Protein Trafficking and Organelle Identity in Eukaryotic Cells  
BIOL 8603  Cell and Molecular Biology of Early Development  
BIOL 8702  Muscle Biology  

**Total Credit Hours**  
18
Courses

TRME 6101. Introduction to Transfusion Medicine. 1 cr. hr.
An overview of transfusion medicine from basic science concepts to the regulations and quality systems required, along with research concepts and presentation skills. Principles of basic genetics, immunology and red blood cell biochemistry are investigated and applied to blood group serology. An in-depth look at the regulations and accreditations governing the field of transfusion medicine including FDA, CLIA and AABB. Includes an introduction to quality management systems and how they apply to blood collection, donor laboratory testing and patient laboratory testing. Provides an overview of principles of research and an introduction to preparing for oral and written presentation. Prereq: Cons. of prog. dir.

TRME 6201. Immunohematology 1. 2 cr. hrs.
An in-depth study of the human blood groups whose antigens are carbohydrate-based to include the ABO and P blood group systems and Lewis system. Discusses history, genetics and biochemistry of the carbohydrate-based antigens. Explores their relationship to transfusion therapy and disease epidemiology. Reviews principles of hemagglutination and complement system. Prereq: Cons. of prog. dir.

TRME 6202. Immunohematology 2. 2 cr. hrs.
An in-depth study of the human blood groups whose antigens are protein-based to include, but not limited to: Rh, LW, MNSs, Duffy, Kidd, Kell and Lutheran blood group systems. Discusses history, genetics and biochemistry of the protein-based antigens. Explores their relationship to transfusion therapy and disease epidemiology. Includes practical experience in problem solving patient or donor typing problems and identifying antibodies to blood group antigens. Prereq: Cons. of prog. dir.

TRME 6220. Essentials of Blood Collection and Testing. 3 cr. hrs.
A comprehensive investigation into the theoretical and practical basis involving the selection and processing of blood donors. Presents a thorough understanding of the physiological aspects of blood storage and transport. Emphasizes infectious disease testing as well as the FDA, AABB and CLIA regulations concerning testing. Prereq: Cons. of prog. dir.

TRME 6301. Management and Education in Transfusion Medicine. 3 cr. hrs.
A systematic approach in acquiring the fundamentals and principles of planning and implementing an educational program in the clinical setting. Offers practice of presentation skills in a classroom setting and state meeting. Also prepares the transfusion medicine practitioner to manage operational and fiscal affairs in a donor center or transfusion service. Prereq: Cons. of prog. dir.

TRME 6401. Anemias and Related Topics. 2 cr. hrs.
An advanced study in the pathological mechanisms underlying the production of human disease involving anemias and leukemias. Emphasizes autoimmune hemolytic anemias, drug-dependent immune hemolytic anemias and hemolytic disease of the fetus and newborn. Also discusses parentage testing requirements. Prereq: Cons. of prog. dir.

TRME 6402. Hemostasis and Transplantation. 2 cr. hrs.
A study of the procedures performed, as well as a complete understanding of disease process as it relates to serological and molecular detection of bleeding and clotting diseases. An in-depth look at the immune system as it relates to transplantation. A formal study of the aspects of histocompatibility, platelet and neutrophil immunology and bleeding and clotting disorders. Also discusses histocompatibility antigens and nomenclature in relation to transfusion and transplantation. Prereq: Cons. of prog. dir.

TRME 6501. Pathophysiology in Transfusion Medicine. 2 cr. hrs.
An advanced study in the pathophysiology of blood transfusion. Reviews indications for blood transfusion including blood component therapy. Also studies adverse events in transfusion medicine. Emphasizes practical aspects of blood management within a transfusion service. Prereq: Cons. of prog. dir.

TRME 6931. Topics in Transfusion Medicine. 1-3 cr. hrs.
In-depth study of concepts, theories, and laboratory techniques in the broad area of transfusion medicine which are not covered in regular courses. Prereq: Cons. of prog. dir.
TRME 6952. Colloquium in Transfusion Medicine. 0 cr. hrs.
Scholarly reports on selected topics in transfusion medicine/immunohematology. Attendance required of all full-time graduate students. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 6995. Independent Study in Transfusion Medicine. 1-3 cr. hrs.
Prereq: Cons. of prog. dir.

TRME 6997. Transfusion Medicine Capstone. 3 cr. hrs.
Project and concluding paper that integrates the subspecialty course work with transfusion medicine. Prereq: Cons. of prog. dir.

TRME 6998. Transfusion Medicine Project. 1 cr. hr.
Project and concluding paper on selected subject that integrates Specialist in Blood Banking course work. Prereq: Cons. of prog. dir.

TRME 6999. Master's Thesis. 1-6 cr. hrs.

TRME 9970. Graduate Standing Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 9991. Professional Project Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 9992. Professional Project Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 9993. Professional Project Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 9994. Master's Thesis Continuation: Less than Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 9995. Master's Thesis Continuation: Half-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 9996. Master's Thesis Continuation: Full-Time. 0 cr. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.
Legal Disclosure

Non-Discrimination Statement

Marquette University, in accordance with its Jesuit tradition and Guiding Values, is committed to fostering a diverse community of outstanding faculty, staff and students, as well as ensuring equal educational opportunity, employment, and access to services, programs and activities, without regard to an individual’s race, color, national origin, religion, age, disability, sex, gender identity/expression, sexual orientation, marital status, pregnancy, predisposing genetic characteristic, or military status. Employees, students, applicants or other members of the University community (including but not limited to vendors, visitors and guests) may not be subjected to harassment that is prohibited by law, or treated adversely or retaliated against based upon a protected characteristic.

The University’s policy as well as federal and state laws and regulations prohibit unlawful discrimination and harassment. These laws include the Americans with Disabilities Act (ADA), Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, Title VII of the Civil Rights Act of 1964 as Amended by the Equal Employment Opportunity Act of 1972. These laws prohibit discrimination and harassment, including sexual harassment and sexual violence.

Employee inquiries concerning the application of Section 503 of the Rehabilitation Act of 1973, Section 402 of the Vietnam Era Veteran’s Readjustment Assistance Act of 1974 and Title I of the Americans with Disabilities Act of 1990 may be referred to the Office of Human Resources; Straz Tower; P.O. Box 1881; Milwaukee, WI 53201-1881; (414) 288-7305.

Student inquiries concerning Section 504 of the Rehabilitation Act of 1973 and Title III of the Americans with Disabilities Act of 1990 may be referred to the Office of Human Resources; Straz Tower; P.O. Box 1881; Milwaukee, WI 53201-1881; (414) 288-1645.

Student and employee inquiries concerning the application of Titles VI, VII the Age Discrimination in Employment Act of 1967, as amended and Executive Order 11246, as amended, may be referred to Lynn Mellantine, Affirmative Action Officer: Straz Tower, P.O. Box 1881, Milwaukee, WI 53201-1881; (414) 288-3430.

If you feel that you have been subjected to sexual harassment, discrimination or sexual misconduct, please contact Kristen Kreple, Title IX Coordinator: Alumni Memorial Union, Room 437, P.O. Box 1881, Milwaukee, WI 53201-1881, (414) 288-3151, kristen.kreple@marquette.edu or the U.S. Department of Education Office for Civil Rights: 500 W. Madison, Street, Suite 1475, Chicago, IL 60661-4544, (312) 730-1560.

The Marquette University Board of Trustees approved the Affirmative action Program, formalizing the University’s position toward human rights. This program reaffirms and specifies action programs to continue the pledge of promotion and equal opportunity for all qualified persons.
University Directory

Updates to the University Directory are published in October.

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President and Chief Executive Officer, Rexnord Corporation

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Managing Partner, Hammes Company

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Grad ’02
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Assistant Director, Jesuit Retreat House

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Michael R. Lovell, Ph.D.
President, Marquette University

Vincent P. Lyles
System Vice President for Community Relations, Advocate Aurora Health Care

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Arts ’87, Law ’90
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President, Loyola Academy

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Arts ’68
Retired School Psychologist

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President, Creighton Preparatory School
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Eng. ’78
Chief Health Care Officer, Association of American Medical Colleges

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Assistant Professor, Saint Louis University

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Arts ’68
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Bus Ad ’83
Chairman and Chief Executive Officer The Hartford

Peggy Troy
Nurs ’74
President and Chief Executive Officer, Children’s Hospital of Wisconsin

Joseph A. Walicki
Chief Executive Officer, Clarios

James M. Weiss
Arts ’68
Retired Senior Portfolio Manager, Segall Bryant Hamill

Thomas H. Werner
Eng ’86
President, CEO and Chairman of the Board, SunPower Corporation

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Law ’79
U.S. Federal Appeals Court Judge, US Court of Appeals for the Fourth Circuit

Rev. Michael A. Zampelli, S.J.
Associate Professor of Theatre and Dance Santa Clara University

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Bus Ad ’67
Chairman and CEO, Bergstrom Corp.

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Retired Senior Vice President and Chief Legal Officer, Kohler Co.

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President, All Pro Broadcasting, Inc.

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Bus Ad ’77
Global Chief Operating Officer-Retired, Ernst Young

Richard J. Fotsch
Eng ’77, Grad ’84
Principal Member, Olde School Industries LLC

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President, Xavier University

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Bus Ad '83
Managing Partner, Incito Capital LLC

Robert L. Kemp
Bus Ad '54
Retired President, Capital Growth Management

James H. Keyes
Bus Ad '62
Retired Chairman and Chief Executive Officer, Johnson Controls, Inc.

Rev. Timothy R. Lannon, S.J.
Assistant for Formation, Midwest Province of the Society of Jesus

Rev. Gregory F. Lucey, S.J.
Chancellor, Spring Hill College

John P. Lynch
Arts '64
Retired Senior Partner, Latham Watkins, LLP

John P. Madden
Bus Ad '56
Retired Chairman, Madden Communications, Inc.

Arnold L. Mitchem, Ph.D.
Grad '81
President Emeritus, Council for Opportunity in Education

Rev. Joseph M. O'Keefe, S.J.
Rector, Ciszek Hall, Fordham University

James D. O'Rourke
Bus Ad '87
Retired Chairman, President and Chief Executive Officer, AA Manufacturing Company

Rev. Ladislas M. Orsy, S.J.
Professor of Law, Georgetown University

Ulice Payne, Jr.
Bus Ad '78, Law '82
President, Addison-Clifton, LLC

Kristine A. Rappé
Retired - SVP/CAO, Wisconsin Energy Corporation

Joseph J. Rauenhorst
Arts '78
CEO, Charter School Properties, Inc.
Glenn A. Rivers  
Arts '85  
Head Coach, Los Angeles Clippers

James A. Runde  
Eng '69  
Special Advisor, Morgan Stanley

Louis J. Rutigliano  
Eng '60, Grad '65  
Retired Vice Chairman, Ameritech Corp.

Wayne R. Sanders  
Grad '72  
Retired Chairman and Chief Executive Officer, Kimberly-Clark Corp.

Mary Ladish Selander  
President, Mary Ladish Selander LLC

Mary Ellen Stanek  
Arts '78  
Managing Director and Director of Asset Management, Robert W. Baird Company

John J. Stollenwerk  
Sp '62, Grad '66

Hon. David A. Straz, Jr.  
Bus Ad '65  
Ambassador at Large  
Honorary Consul General of the Republic of Liberia  
Honorary Consul General of the Republic of Honduras

Charles M. Swoboda  
Eng '89  
Chairman and Chief Executive Officer, Cree, Inc.

Cheryl T. Thomas  
Arts '68  
President and Chief Executive Officer, Ardmore Roderick

Rev. Thomas H. Tobin, S.J.  
Professor of Theology, Loyola University Chicago

Rev. L. John Topel, S.J.  
Arts '73  
Jesuit Assistant to the Law School Dean, Seattle University

Rhona Vogel  
Bus Ad '76  
President, Vogel Consulting Group

Rev. Robert A. Wild, S.J.  
Chancellor, Marquette University

Anne A. Zizzo  
Jour '87  
President/CEO, Zizzo Group

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Vice President for Human Resources  

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Executive Director, Diversity and Inclusion
Douglas Woods, Ph.D.
Vice Provost for Graduate Professional Studies
Dean, Graduate School

Edith Hudson
Chief, Marquette University Police Department

Joseph Mueller, S.J.
Rector, Marquette University Jesuit Community

Laurie Panella
Chief Information Officer

**Academic Senate 2020-21**

Sumana Chattopadya, Ph.D. (Chair)
Diederich College of Communication Annual

Kimo Ah Yun, Ph.D. (Co-Chair)
Acting Provost
Dean, Diederich College of Communication Ex-Officio

Yasser Khaleld, Ph.D. (Vice Chair)
School of Dentistry Annual

Bruce Boyden, J.D. (Secretary)
Law School elected faculty-annual

Allison Abbot, Ph.D.
Klingler College of Arts and Sciences faculty elected at large-2021

Katie Blank
Academic Library Assembly elected faculty librarians-2021

Rebecca Blemberg, J.D.
Law School elected faculty-2022

Bruce Boyden, J.D.
Law School elected faculty-2020

Joshua Burns, Ph.D.
Klingler College of Arts and Sciences faculty elected at large-2021

Sumana Chattopadyay, Ph.D.
Diederich College of Communication elected faculty-2018

Michael Danduran
College of Health Sciences elected faculty-2021

Joseph Domblesky, Ph.D.
Opus College of Engineering elected faculty-2020

Michael Donoghue, Ph.D.
Klingler College of Arts and Sciences elected faculty-2022

Kim Factor, Ph.D.
Klingler College of Arts and Sciences elected faculty-2020

Marilyn Frenn, Ph.D.
College of Nursing elected faculty-2020

Arndt Guentsch, D.D.S.
School of Dentistry elected faculty-2020

Jake Hanauer
MUSG 2020

Heather Hathaway, Ph.D.
Acting Dean, Klingler College of Arts and Sciences Per Statutes

Todd Hernandez
Klingler College of Arts and Sciences elected at large-2020

Heather James
Libraries Participating faculty elected at large-2022

Yasser Khaled, Ph.D.
School of Dentistry elected faculty-2021

Chima Korieh, Ph.D.
Klingler College of Arts and Sciences elected faculty-2022

William Lobb, D.D.S.
School of Dentistry Dean

Patrick Loftis
College of Health Sciences Participating faculty elected at large-2021

Timothy Melchert, Ph.D.
College of Education elected faculty-2021

Felicia Miller, Ph.D.
College of Business Administration elected faculty-2020

Michelle Mynlieff, Ph.D.
Klingler College of Arts and Sciences elected faculty-2021

Paul Nolette, Ph.D.
Klingler College of Arts and Sciences elected faculty at large-2020

Lars Olson, Ph.D.
Opus College of Engineering elected faculty-2022

Madeline Schmidt, Ph.D.
College of Nursing elected faculty-2021

John Su, Ph.D.
Vice Provost for Academic Affairs Per Statutes

Brooke Thorson
Professional/Graduate School Student 2020

Regina Vela-Mesta
MUSG 2020

A.Jay Wagner
Diederich College of Communication elected faculty-2022

Doris Walker-Dalhouse, Ph.D.
College of Education elected faculty-2021

Jennica Webster, Ph.D.
College of Business Administration elected faculty-2021

Janice Welburn
Dean, Libraries Dean

Mary Jo Wiemiller
College of Health Sciences elected faculty-2022

Douglas Woods, Ph.D.
Vice Provost for Graduate and Professional Studies and Dean of the Graduate School Per Statutes

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William E. Cullinan, Ph.D. (Dean)
College of Health Sciences
Sarah Bonewits Feldner, Ph.D. (Acting Dean)
Diederich College of Communication

Joseph Daniels, Ph.D. (Acting James H. Keyes Dean)
College of Business Administration/Graduate School of Management

Heather Hathaway, Ph.D. (Acting Dean)
Klingler College of Arts and Sciences

William A Henk, Ed.D. (Dean)
College of Education

Joseph D. Kearney, J.D. (Dean)
Law School

Janet Krejci, Ph.D. (Dean)
College of Nursing

William K. Lobb, D.D.S. (Dean)
School of Dentistry

Kristina (Kris) Ropella, Ph.D. (Opus Dean)
Opus College of Engineering

Janice Welburn (Dean)
Libraries

Douglas Woods, Ph.D. (Dean)
Graduate School

Seth Zlotocha (University Registrar)
Office of the Provost

University Board of Graduate Studies 2020-21

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Klingler College of Arts and Sciences/Natural Sciences 2021

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College of Education 2021

Scott D'Urso, Ph.D.
Deiderich College of Communication 2022

James Hoelzle, Ph.D.
Klingler College of Arts and Sciences/Social Sciences 2021

Norah Johnson, Ph.D.
College of Nursing 2022

Sarah Kizuk
Graduate Student (GSO) 2020

Dawei Liu, D.D.S.
School of Dentistry 2021

Farrokh Nourzad, Ph.D.
College of Business Administration 2020

Michael O'Hear, J.D.
Law School 2022

Lars Olson, Ph.D.
Senate Liaison: Engineering Annual

Paula Papanek, Ph.D.
Faculty and Administration 2020-21

Klingler College of Arts and Science

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Associate Professor of Biological Sciences

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Yale University
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Associate Professor of Theology

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Professor of Physics

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Associate Dean
Professor of Philosophy

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Tufts University
Associate Professor of Biological Sciences
Director, Undergraduate Studies (Fall)

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University of Wisconsin-Madison
Associate Professor of Philosophy

Eugenia V. Afinoguenova, Ph.D.
Georgetown University
Professor of Spanish
Chair, Languages, Literatures and Cultures

Raquel Aguili de Murphy, Ph.D.
University of Wisconsin-Madison
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Karen Andeen, Ph.D.
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Assistant Professor of Physics
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Marquette University
Professor Emeritus of Philosophy

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Lecturer

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Assistant Professor of English

Deanna Arble, Ph.D.
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Chair, Political Science
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Brian Bennett, D.Phil.
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Professor of Physics
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Mark Berlin, Ph.D.
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Che Bhatia, M.B.A.
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Edwin Block, Ph.D.
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Associate Dean, Research and Graduate Affairs

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Professor Emerita of Political Science

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Adjunct Instructor
Jacqueline Boynton, J.D.
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Adjunct Instructor

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Director, Undergraduate Studies

Charles Breeden, Ph.D.
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Associate Professor Emeritus of Mathematics, Statistics and Computer Science

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Professor Emeritus of Physics

Brian C. Brush, Ph.D.
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Dennis W. Brylow, Ph.D.
Purdue University
Professor of Computer Science
Associate Chair, Computer Science

James Buchanan, Ph.D.
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Professor Emeritus of Biological Sciences

David R. Buckholdt, Ph.D.
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Professor Emeritus of Sociology

Rev. Thaddeus J. Burch, S.J., S.T.L., Ph.D.
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Joshua Ezra Burns, Ph.D.
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Acting Associate Dean

Cedric Burrows, Ph.D.
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Karl E. Byleen, Ph.D.
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Louise A. Cainkar, Ph.D.
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Associate Professor of Social Welfare and Justice

Lilly Campbell, Ph.D.
University of Washington
Assistant Professor of English

Gerard Canavan, Ph.D.
Duke University
Associate Professor of English
Director Graduate Studies (Fall)
Sabbatical: Spring 2020

Patrick W. Carey, Ph.D.
Fordham University
Professor Emeritus of Theology

Sheena Carey, M.A.
Marquette University
Lecturer

German D. Carrillo, Ph.D.
University of Illinois at Urbana-Champaign
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Jamee Carroll, M.S.
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Curtis L. Carter, Ph.D.
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Belen S. Castaneda, Ph.D.
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Associate Professor of Spanish

Virginia A. Chappell, Ph.D.
University of Washington
Associate Professor Emerita of English

Jesse Cheng, Ph.D.
University of California-Irvine
Assistant Professor of Criminology and Law Studies

Yoon Choi, Ph.D.
University of Cambridge
Assistant Professor of Philosophy

Abdur R. Chowdhury, Ph.D.
University of Kentucky
Professor Emeritus of Economics

David E. Clark, Ph.D.
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Professor of Economics
Executive Associate Dean, Business Administration

Joseph Clark, Ph.D.
State University of New York at Buffalo
Assistant Professor of Chemistry

Anne V. Clough, Ph.D.
University of Arizona
Professor of Mathematical and Statistical Sciences

Rev. David M. Coffey, S.T.D.
Theological Faculty of Sydney
Professor Emeritus of Theology

Stephen Cole, Ph.D.
University of California-Irvine
Assistant Professor of Economics

Jeffrey Coleman, Ph.D.
University of Chicago
Assistant Professor of Spanish

Roberta L. Coles, Ph.D.
University of Wisconsin-Madison
Professor of Sociology

Joseph M. Collins, Ph.D.
Illinois Institute of Technology
Associate Professor Emeritus of Physics

Dinorah Cortes-Velez, Ph.D.
University of Wisconsin-Madison
Associate Professor of Spanish

James B. Courtright, Ph.D.
Johns Hopkins University
Professor Emeritus of Biological Sciences

Michael Cover, Ph.D.
University of Notre Dame
Assistant Professor of Theology

Alexandra L. Crampton, Ph.D.
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Associate Professor of Social Welfare and Justice

Sheldon E. Cremer, Ph.D.
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Professor Emeritus of Chemistry

John E. Curran, Ph.D.
University of Virginia
Professor of English

Sarah Curry, M.Ed.
Marquette University
Instructor

D. Lyle Dabney, Dr. Theol.
Eberhard-Karls Universität-Tübingen
Associate Professor of Theology

Scott Dale, Ph.D.
University of Pennsylvania
Associate Professor of Spanish
Co-Director, Graduate Studies

Tara Daly, Ph.D.
University of California-Berkeley
Assistant Professor of Spanish

Joseph P. Daniels, Ph.D.
Indiana University-Bloomington
Professor of Economics
Acting Keyes Dean of Business Administration

John D. Davis, Ph.D.
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Professor Emeritus of Economics

Ed de St. Aubin, Ph.D.
Northwestern University
Associate Professor of Psychology

Deirdre A. Dempsey, Ph.D.
The Catholic University of America
Associate Professor of Theology
Director, Graduate Studies

Jodine L. Deppisch, B.A.
Marquette University
Adjunct Instructor

Boubakary Diakite, Ph.D.
Louisiana State University-Baton Rouge
Assistant Professor of French

Marina Dimitrijevic, B.A
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Adjunct Instructor

Anthony Dittus, M.A.
Ave Maria University
Lecturer

Darrell D. Dobbs, Ph.D.
University of Rochester
Professor of Political Science

Christopher Dockendorff, Ph.D.
University of Toronto
Assistant Professor of Chemistry

William A. Donaldson, Ph.D.
Dartmouth College
Professor of Chemistry

Rev. John P. Donnelly, S.J., Ph.D.
University of Wisconsin-Madison
Professor Emeritus of History

Michael E. Donoghue, Ph.D.
University of Connecticut
Associate Professor of History

Rev. Robert M. Doran, S.J., Ph.D.
Marquette University
Professor of Theology
Emett Doerr Chair, Catholic Systematic Theology

Stephen M. Downs, Ph.D.
University of Iowa
Professor Emeritus of Biological Sciences

Michael K. Duffey, Ph.D.
University of Notre Dame
Associate Professor Emeritus of Theology

Edward T. Duffy, Ph.D.
Columbia University
Professor Emeritus of English

Rev. Ryan Duns, S.J., Ph.D.
Boston College
Assistant Professor of Theology
Assistant Chair

Thomas J. Eddinger, Ph.D.
University of Wisconsin-Madison
Professor of Biological Sciences
Director, Undergraduate Studies (Spring)
Sabbatical: Fall 2019

Alison Clark Efford, Ph.D.
The Ohio State University
Associate Professor of History

John Engbers, Ph.D.
University of Notre Dame
Assistant Professor of Mathematical and Statistical Sciences

Ana Escudero, M.A.
Marquette University
Adjunct Instructor

Stuart Eskew, M.A.
University of Wisconsin-Madison
Lecturer

Kim A. S. Factor, Ph.D.
University of Colorado at Denver
Associate Professor of Mathematical and Statistical Sciences

Eberhard-Karls Universität-Tübingen
Professor Emeritus of Theology

Mary Ann Farkas, Ph.D.
Michigan State University
Professor of Criminology and Law Studies

Ashley Faytol, M.S.
California State University-Fullerton
Adjunct Instructor

Jennifer Fenton, M.A.
State University of New York at Buffalo
Adjunct Instructor

Adam T. Fiedler, Ph.D.
University of Wisconsin-Madison
Associate Professor of Chemistry

Jennifer Fishman, Ph.D.
Stanford University
Associate Professor of English

Robert H. Fitts, Ph.D.
University of Wisconsin-Madison
Professor Emeritus of Biological Sciences

Leah Flack, Ph.D.
Northwestern University
Associate Professor of English
Chair, English
Director, Graduate Studies (Spring)

Michael Flatley, B.A.
Marquette University
Lab Instructor

Michael H. Fleet, Ph.D.
University of California-Los Angeles
Professor Emeritus of Political Science

A. Kristen Foster, Ph.D.
University of Wisconsin-Madison
Associate Professor of History
Sabbatical: Fall 2019

Stephen L. Franzoi, Ph.D.
University of California-Davis
Professor Emeritus of Psychology

H. Richard Friman, Ph.D.
Cornell University
Professor of Political Science
Eliot Fitch Chair, International Studies

Nathan Fritschler, M.S.
University of Wisconsin-Milwaukee
Adjunct Instructor

Roberta Gaither-Gayle, M.S.
Marian University
Adjunct Instructor

Anthony Gamble, Ph.D.
University of Minnesota-Twin Cities
Assistant Professor of Biological Sciences

Melissa Ganz, Ph.D.
Yale University
Associate Professor of English

David E. Gardinier, Ph.D.
Yale University
Professor Emeritus of History

James R. Gardinier, Ph.D.
State University of New York at Buffalo
Associate Professor of Chemistry
Sabbatical: Fall 2019

Sarah E. Gendron, Ph.D.
University of Wisconsin-Madison
Associate Professor of French
Sabbatical: 2019-2020

Alyson C. Gerdes, Ph.D.
Purdue University
Professor of Psychology
Director, Graduate Studies (Spring)
Sabbatical: Fall 2019

Susan Giaimo, Ph.D.
University of Wisconsin-Madison
Adjunct Associate Professor of Biomedical Sciences

Kevin W. Gibson, Ph.D.
University of Colorado at Boulder
Professor of Philosophy
Chair, Philosophy
Owen M. Goldin, Ph.D.
University of Texas-Austin
Professor of Philosophy
Associate Chair
Bishop Alexander Goltzin, D.Phil.
Oxford University
Professor Emeritus of Theology
Sergio Gonzalez, Ph.D.
University of Wisconsin-Madison
Assistant Professor of History
Armando Gonzalez-Perez, Ph.D.
Michigan State University
Professor Emeritus of Spanish
Nakia S. Gordon, Ph.D.
Bowling Green State University
Associate Professor of Psychology
Assistant Chair, Psychology
Meghan S. Gruenewald, Ph.D.
Michigan State University
Associate Professor of Criminology and Law Studies
Chair, Social and Cultural Sciences
John H. Grych, Ph.D.
University of Illinois at Urbana-Champaign
Professor of Psychology
Director, Graduate Studies (Fall)
Stephen J. Guastello, Ph.D.
Illinois Institute of Technology
Professor of Psychology
Shion Guha, Ph.D.
Cornell University
Assistant Professor of Computer Science
Monica Unda Gutierrez, Ph.D.
University of London
Assistant Professor of Political Science and Economics
Noreen E. Haas-Lephardt, Ph.D.
University of Tennessee-Knoxville
Associate Professor of Practice Emerita
Justice Hagan, Ph.D.
Marquette University
Lecturer
Gholamhossein G. Hamedani, Ph.D.
Michigan State University
Professor of Mathematical and Statistical Sciences
Clemens B. Hanneken, Ph.D.
University of Illinois at Urbana-Champaign
Professor Emeritus of Mathematics, Statistics and Computer Science
Angelique Harris, Ph.D.
Graduate Center, City University of New York
Associate Professor of Sociology
Director, Center for Gender and Sexualities Studies

J. Douglas Harris, Ph.D.
University of Kansas-Lawrence
Professor Emeritus of Mathematics, Statistics and Computer Science

Kimberly Harris, Ph.D.
The Pennsylvania State University
Assistant Professor of Philosophy

Stanley M. Harrison, Ph.D.
Fordham University
Associate Professor Emeritus of Philosophy

Steven Hartman-Keiser, Ph.D.
The Ohio State University
Associate Professor of English
Director, Undergraduate Studies

Carla H. Hay, Ph.D.
University of Kentucky
Associate Professor of History

Robert P. Hay, Ph.D.
University of Kentucky
Associate Professor Emeritus of History

Todd A. Hernandez, Ph.D.
University of Kansas
Professor of Spanish
Co-Director, Graduate Studies
Sabbatical: Spring 2020

Julian V. Hills, Th.D.
Harvard University
Associate Professor of Theology

Heather R. Hlavka, Ph.D.
University of Minnesota-Twin Cities
Associate Professor of Criminology and Law Studies

James Hoelzle, Ph.D.
University of Toledo
Associate Professor of Psychology

Norman E. Hoffman, Ph.D.
Northwestern University
Professor Emeritus of Chemistry

James A. Holstein, Ph.D.
University of Michigan
Professor Emeritus of Sociology

Kathryn Hom, Ph.D.
Texas Tech University
Adjunct Instructor

David Horskoetter, Ph.D.
Marquette University
Adjunct Instructor

Jeanne M. Hossenlopp, Ph.D.
Syracuse University
Professor of Chemistry
Vice President for Research and Innovation
Simon Howard, Ph.D.
Tufts University
Assistant Professor of Psychology

Claude J. (C.J.) Hribal, M.A. in Creative Writing
Syracuse University
Louise Edna Goeden Professor of English

Krassimira Hristova, Ph.D.
Sofia University, Bulgaria
Associate Professor of Biological Sciences

Jier Huang, Ph.D.
Emory University
Associate Professor Chemistry

Rev. D. Thomas Hughson, S.J., Ph.D.
University of St. Michael's College-Toronto
Associate Professor Emeritus of Theology

Sungjun Huh, Ph.D.
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Assistant Professor of Economics

Javier A. Ibanez-Noe, Ph.D.
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Associate Professor of Philosophy

Thomas J. Jablonsky, Ph.D.
University of Southern California
Professor Emeritus of History

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Associate Professor Emeritus of German

Thomas L. Jeffers, Ph.D.
Yale University
Professor Emeritus of English

Stephen Jenks, Ph.D.
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Adjunct Instructor

Mark F. Johnson, Ph.D.
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Associate Professor of Theology

Matthew Johnson, B.A.
University of Pittsburgh
Assistant Professor of Naval Science

Nicholas Jolly, Ph.D.
University of Connecticut
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Boston College
Professor of Philosophy

Richard S. Jones, Ph.D.
Iowa State University
Professor of Sociology

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Thomas Kaczmarek, Ph.D.
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Howard P. Kainz, Ph.D.
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Professor Emeritus of Philosophy

John P. Karkheck, Ph.D.
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Professor Emeritus of Physics

Kathleen M. Karrer, Ph.D.
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Professor Emerita of Biological Sciences

Astrida S. Kaugars, Ph.D.
Case Western Reserve University
Associate Professor of Psychology
Sabbatical: Fall 2019

Alice B. Kehoe, Ph.D.
Harvard University
Professor Emerita of Anthropology

Conor Kelly, Ph.D.
Boston College
Assistant Professor of Theology
Director, Undergraduate Studies

Rev. William J. Kelly, S.J., S.T.D
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James R. Kincaid, Ph.D.
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Professor of Chemistry
Chair, Chemistry

Lezlie S. Knox, Ph.D.
University of Notre Dame
Associate Professor of History
Assistant Chair, History

Tiffany Kodak, Ph.D.
Louisiana State University
Associate Professor of Psychology
Heather H. Kohls, Ph.D.
University of Wisconsin-Milwaukee
Associate Professor of Practice
Director, Global Business Learning

Chima Korieh, Ph.D.
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Jeanette R. Kraemer, Ph.D.
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Professor of Physics
Associate Dean for Admissions, Retention and Experiential Learning

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Director, Graduate Studies

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Associate Professor of Political Science

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Chair, Economics

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Sabbatical: 2019-2020

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Kenneth A. Mendelson, Ph.D.
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Director, Applied Mathematical Economics

Gale E. Miller, Ph.D.
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Professor Emeritus of Social and Cultural Sciences

Timothy Miller, Ph.D.
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Lecturer

Paul Misner, Th.D.
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Professor Emeritus of Theology

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Professor Emeritus of Sociology

Dawne Moon, Ph.D.
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Centre Sèvres-Paris
Associate Professor of Theology

Sameena A. Mulla, Ph.D.
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J. Patrick Mullins, Ph.D.
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Assistant Professor of History

Michael Mullooly, M.A.
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Chair, Biological Sciences

Jason Nado, Ph.D.
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Sabbatical: Spring 2020

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Peter Nimmer, M.S.
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Chair, Theology

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Kelly Chair

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Director, Graduate Studies

Peter Staudenmaier, Ph.D.
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Visiting Assistant Professor

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Professor of English
Vice Provost for Academic Affairs

Norman C. Sullivan, Ph.D.
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Duane H. Swank, Ph.D.
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Professor Emeritus of Philosophy

Nathaniel Taylor, B.A.
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Lecturer

Steven M. Taylor, Ph.D.
Wayne State University
Professor Emeritus of French

Timothy Tharp, Ph.D.
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Assistant Professor of Physics

Athan G. Theoharis, Ph.D.
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Professor Emeritus of History

Rev. John Thiede, S.J., Ph.D.
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Associate Professor of Theology

Raju G. C. Thomas, Ph.D.
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Professor Emeritus of Political Science

Robert G. Thomson, Ph.D.
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Associate Professor Emeritus of Biological Sciences

Jeffrey Tiger, Ph.D.
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Director, Graduate Studies

Theresa M. Tobin, Ph.D.
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Associate Professor of Philosophy
Associate Dean, Academic Affairs and Student Development, Graduate School

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Peter G. Toumanoff, Ph.D.
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Associate Professor Emeritus of Economics

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Director, Undergraduate Studies

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Brian R. Unsworth, Ph.D.
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Miao Grace Wang, Ph.D.
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Gail L. Waring, Ph.D.
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Professor Emerita of Biological Sciences

Mark Waters, M.A.
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Instructor

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Professor Emeritus of History

Michael Wert, Ph.D.
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Lecturer

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Associate Professor of Criminology and Law Studies

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Sabbatical: 2019-2020

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Christopher Wolfe, Ph.D.
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Susan K. Wood, SCL, Ph.D.
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Douglas Woods, Ph.D.
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Vice Provost for Graduate and Professional Studies
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Professor of Biological Sciences

Chae S. Yi, Ph.D.
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William R. Burleigh and E.W. Scripps Professor

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Acting Provost and Executive Vice President for Academic Affairs

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Sabbatical: Spring 2020

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