Computer and Information Science, MS

Chairperson: Dennis Brylow, Ph.D.
Program Director: Thomas Kaczmarek, Ph.D.
Computer and Information Science website (https://www.marquette.edu/grad/programs-computing.php)

Department Affiliation

The master of science degree in computer and information science is affiliated with the Department of Computer Science in the Klingler College of Arts and Sciences.

Degree Offered

Master of Science

Degree Description

The master of science in computer and information science is a professional degree designed to be dual purpose. It can provide a pathway into the computer and information science profession or an enhancement to the knowledge and skills of current professionals.

The program offers an accelerated degree option for students that requires three undergraduate courses in computing, a career change opportunity for students with any undergraduate background, and two specializations that prepare students for successful careers in areas with high demand, namely cybersecurity and data analytics.

The program is designed with the flexibility and options that adult learners require. This includes 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 cybersecurity and data/predictive analytics (moratorium on admissions for the big data and data analytics specialization). A third specialization is offered for students with no formal background in computer science wishing to do a career change into computer and information science.

The program has learning outcomes that reflect professional leadership competencies that are independent of any particular area of computer and information technology studied. At the conclusion of this program, students will be able to do the following:

1. Appraise relationships among a variety of computer and information science practices and technologies to create integrated solutions to computer and information science problems.
2. Communicate computer and information science problems and suggested solutions to other professionals and with business clients.
3. Formulate and defend realistic and detailed designs for solutions of problems of enterprise scope.
4. Evaluate and apply common standards for technology and technology management.

Program Description

The computer and information science program covers topics from computer science, computer engineering, software engineering, information systems, information technology, cybersecurity and data science. By design, the computer and information science 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 computer and information science professionals interested in starting a career or updating their skills. Careers are in areas such as cybersecurity, 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 course work 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.

Computer and Information Science Master of Science

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 computer and information science 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.

Computer and information science students gain both breadth and an in-depth knowledge of their field.

Breadth Requirement

Computer and information science 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 computer and information science 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 computer and information science program. The final course selections are determined on an individual basis with approval by an adviser. Students may consult their adviser for a list of the currently approved courses from other departments.

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 computer and information science program. Six out-of-program elective credits may be selected from other Marquette graduate courses germane to computer and information science 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. The practicum, as outlined in the next section, can serve as the 6 credit 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 courses primarily from computer science, information technology and computer engineering.

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 computer and information science program. Six out-of-program elective credits may be selected from other Marquette graduate courses germane to computer and information science or its applications.

Specializations

The master of science program in computer and information science offers four specializations: information assurance and cyber defense, big data and data analytics *(moratorium on admissions for new students)*, the computing career change opportunity, and the integrated practicum.

Information Assurance and Cyber Defense

This specialization requires practical experience. In this specialization, the professional project provides 0 credit hours for the leadership of a project in cybersecurity. Permission to undertake the specific project must come from the director of graduate studies for the program.

Code	Title	Hours
COSC 5300	Network Design and Security	3
COSC 5360	Software and System Security	3
COSC 6280	Advanced Computer Security	3
COSC 6550	Introduction to Cybersecurity	3
COSC 6560	Principles of Service Management and System Administration	3
COSC 6998	Professional Project in Computer Science	0
Total Credit Hours:		**15**

Big Data and Data Analytics
MORATORIUM ON ADMISSIONS FOR NEW STUDENTS

This specialization features course work related to trends in data management, parallelism and data analysis techniques used for business applications.

Code	Title	Hours
COSC 5610	Data Mining (or 6000-level graduate statistics course)	3
COSC 6060	Parallel and Distributed Systems	3
COSC 6380	Big Data Systems (or 6000-level class with a focus on databases or data warehouses such as COSC 6530)	3
COSC 6510	Data Intelligence	3
COSC 6520	Data Analytics	3
Elective-Graduate course emphasizing the application of data collection and analysis in a discipline outside of computing (requires consent of adviser)		3
Total Credit Hours:		**18**

Computing Career Change Opportunity

This specialization is a workforce development initiative designed to move students from an underemployed status into a STEM career in computer and information science. 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 computer and information science program prerequisites in a 7-credit graduate course. 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 computer and information science program.

INTEGRATED PRACTICUM

Within Plan B, this specialization 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. There are three primary career focus areas available: cybersecurity, system development and analytics. The primary career focus must be related to the work assignment. The practicum credits can serve as the 6-credit secondary career focus.

In the integrated practicum specialization, 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, career focus and work assignments. Work assignments are paired with 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 term of the program and must continue through graduation.

The integrated practicum specialization meets the 36-credit requirement of Plan B through a minimum of 30 credits of course work (of which at least 15 credits must be at the 6000 level) and 6 credits of the integrated practicum (COSC 6965 Curriculum Integrated Practicum in Computing); students choose a primary career focus and complete 9 credits required for that primary career focus area as indicated in the table that follows. Each 300-350 hours of integrated work experience earn one practicum credit. During the final practicum session, students may earn an additional practicum credit for a comprehensive paper demonstrating their competency in their primary career focus through accomplishments in their work assignments.

Code	Title	Hours
COSC 6965	Curriculum Integrated Practicum in Computing	6
Choose one of the following primary career focus areas		9
Cybersecurity Oversight and Governance		
COSC 6550	Introduction to Cybersecurity	
COSC 6560	Principles of Service Management and System Administration	
COSC 6580	Data Security and Privacy	
Solution/Software/Systems Development		
COSC 6050	Elements of Software Development	
COSC 6055	Software Quality Assurance	
COSC 6360	Enterprise Architecture	
Data Analytics/AI		
COSC 5600	Fundamentals of Artificial Intelligence	
COSC 6510	Data Intelligence	
COSC 6520	Data Analytics	
Total Credit Hours:		**15**

Additional considerations include:

- The student must maintain full-time graduate student status every term with the exception of the final term.
- Participation in this specialization is subject to the availability of work assignments and the qualifications of the student.
- The student must apply to the master of science program in computer and information science and inform the director of the program or their adviser of the intention to participate in the integrated practicum before their first term in the program.
- 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.

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 computer and information science 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 computer and information science 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 computer and information science 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.

University Policies

- Academic Censure - Graduate School (https://bulletin.marquette.edu/policies/academic-censure/graduate/)
- Academic Integrity (https://bulletin.marquette.edu/policies/academic-integrity/)

- Academic Misconduct (https://bulletin.marquette.edu/policies/academic-misconduct-policy/)
- Academic Program Definitions (https://bulletin.marquette.edu/policies/academic-programs-defined/)
- Accelerated Degree Programs (https://bulletin.marquette.edu/policies/accelerated-degree-programs/)
- Attendance - Graduate School (https://bulletin.marquette.edu/policies/attendance/graduate/)
- Awarding Diplomas and Certificates (https://bulletin.marquette.edu/policies/awarding-diplomas-certificates/)
- Background Checks, Drug Testing (https://bulletin.marquette.edu/policies/background-checks-drug-testing/)
- Class Rank (https://bulletin.marquette.edu/policies/class-rank/)
- Commencement (https://bulletin.marquette.edu/policies/commencement/)
- Conferral of Degrees and Certificates (https://bulletin.marquette.edu/policies/conferral-degrees-certificates/)
- Course Levels (https://bulletin.marquette.edu/policies/course-levels/)
- Credit Hour (https://bulletin.marquette.edu/policies/credit/)
- Credit Load - Graduate School (https://bulletin.marquette.edu/policies/credit-load/graduate/)
- Faculty Grading (https://bulletin.marquette.edu/policies/faculty-grading/)
- Family Education Rights and Privacy Act-FERPA (https://bulletin.marquette.edu/policies/ferpa/)
- Grade Appeals (https://bulletin.marquette.edu/policies/grade-appeals/)
- Grading System - Graduate School and Graduate School of Management (https://bulletin.marquette.edu/policies/grading-system/graduate-management/)
- Graduation - Graduate School (https://bulletin.marquette.edu/policies/graduation/graduate/)
- Immunization and Tuberculosis Screening Requirements (https://bulletin.marquette.edu/policies/immunization-and-tuberculosis-screening/)
- Last Date of Attendance/Activity (https://bulletin.marquette.edu/policies/last-dateof-attendance-activity/)
- Military Call to Active Duty or Training (https://bulletin.marquette.edu/policies/militarycall-active-duty-training/)
- Registration - Graduate School (https://bulletin.marquette.edu/policies/registration/graduate/)
- Repeated Courses - Graduate School (https://bulletin.marquette.edu/policies/repeated-courses/graduate/)
- Student Data Use and Privacy (https://bulletin.marquette.edu/policies/student-data-use-privacy/)
- Transcripts-Official (https://bulletin.marquette.edu/policies/transcripts-official/)
- Transfer Course Credit - Graduate School (https://bulletin.marquette.edu/policies/transfer-course-credit-policy/graduate/)
- Withdrawal - Graduate School (https://bulletin.marquette.edu/policies/withdrawals/graduate/)

Graduate School Policies

- Academic Performance (https://bulletin.marquette.edu/graduate/policies/academic-performance/)
- Academic Programs Overview (https://bulletin.marquette.edu/graduate/policies/academic-programs-overview/)
- Advising (https://bulletin.marquette.edu/graduate/policies/advising/)
- Assistantships and Fellowships (https://bulletin.marquette.edu/graduate/policies/assistantships-andfellowships/)
- Certificate Concurrent Enrollment (https://bulletin.marquette.edu/graduate/policies/certificate-concurrent-enrollment/)
- Conduct (https://bulletin.marquette.edu/graduate/policies/conduct/)
- Confidentiality of Proprietary Information (https://bulletin.marquette.edu/graduate/policies/confidentiality-proprietary-information/)
- Continuous Enrollment (https://bulletin.marquette.edu/graduate/policies/continuous-enrollment/)
- Courses and Prerequisites (https://bulletin.marquette.edu/graduate/policies/courses-prerequisites/)
- Cross-listed Courses (https://bulletin.marquette.edu/graduate/policies/cross-listed-courses/)
- Deadlines (https://bulletin.marquette.edu/graduate/policies/deadlines/)
- Graduate Credit (https://bulletin.marquette.edu/graduate/policies/graduate-credit/)
- Graduate School Policies (https://bulletin.marquette.edu/graduate/policies/)
- Independent Study (https://bulletin.marquette.edu/graduate/policies/independent-study/)
- Intellectual Property (https://bulletin.marquette.edu/graduate/policies/intellectual-property/)
- Research Involving Humans, Animals, Radioisotopes or Recombinant DNA/Transgenic Organisms (https://bulletin.marquette.edu/graduate/policies/research-involving-humans-animals-radioisotopes-recombinant-dnatransgenic-organisms/)
- Temporary Withdrawal from Graduate Program (https://bulletin.marquette.edu/graduate/policies/temporary-withdrawal-graduate-program/)
- Time Limitations (https://bulletin.marquette.edu/graduate/policies/time-limitations/)
- Working with Minors (https://bulletin.marquette.edu/graduate/policies/working-minors/)

Computer Science Graduate Programs

- Applied Statistics, MS (https://bulletin.marquette.edu/graduate/applied-statistics-ms/)
- Bioinformatics, MS (https://bulletin.marquette.edu/graduate/bioinformatics-ms/)
- Computer Science, PHD (https://bulletin.marquette.edu/graduate/computer-science-phd/)
- Computer and Information Science, MS (p. 1)
- Data Science, Certificate (https://bulletin.marquette.edu/graduate/data-science-certificate/)
- Data Science, MS (https://bulletin.marquette.edu/graduate/data-science-ms/)

COSC 5010 Teaching Computer Science (3 credits)
Historical background, problems, curricular materials and pedagogy in computer science pertinent to the needs of secondary school teachers.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205010)

COSC 5290 Real-Time and Embedded Systems (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Spring Term, 2021 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205290)

COSC 5300 Network Design and Security (3-4 credits)
Focuses on the design and protocols of the upper layers of the Internet architecture, including the TCP/IP protocol suite, packet switching and routing, network programming and applications. Emphasizes related security attacks and defenses, including DNSSEC, TSL, IPsec and the BGP PKI protections. Taught as a lecture only or as a lecture with lab component.
Level of Study: Graduate
Last four terms offered: 2022 Fall Term, 2021 Fall Term, 2020 Fall Term, 2019 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205300)

COSC 5360 Software and System Security (3 credits)
Fosters comprehension of cybersecurity foundations such as cryptography, operating system security, threat modeling, and secure programming. Develops passion for cybersecurity essential to performance of professional roles as developers, engineers, and managers.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Spring Term, 2021 Spring Term, 2020 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205360)

COSC 5370 Internet of Things (IoT) (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2022 Summer Term, 2021 Summer Term, 2020 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205370)

COSC 5400 Compiler Construction (3 credits)
Lexical analysis, parsing, code generation and optimization. Includes theoretical foundations and the practical concerns of implementation.
Level of Study: Graduate
Last four terms offered: 2022 Fall Term, 2020 Fall Term, 2019 Spring Term, 2017 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205400)

COSC 5500 Visual Analytics (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Spring Term, 2021 Spring Term, 2020 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205500)

COSC 5550 Social and Collaborative Computing (3 credits)
Introduces Social Computing and Computer-Supported Cooperative Work (CSCW). Field includes theory, technology and study of computing systems that support groups of users and facilitate collaboration. Example applications and case studies include email, social networking sites, peer production, crowdsourcing, calendars, scheduling and meeting apps, online dating sites, multiplayer games, discussion forums, instant messaging, collaborative editors and analysis tools.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205550)

COSC 5600 Fundamentals of Artificial Intelligence (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2022 Fall Term, 2021 Fall Term, 2020 Fall Term, 2019 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205600)

COSC 5610 Data Mining (3 credits)
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, partitional clustering and hierarchical clustering.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Fall Term, 2022 Spring Term, 2021 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205610)

COSC 5800 Principles of Database Systems (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Fall Term, 2022 Summer Term, 2022 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205800)

COSC 5860 Component-Based Software Construction (3 credits)
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+.
Level of Study: Graduate
Last four terms offered: 2011 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205860)

COSC 5931 Topics in Computer Science (1-3 credits)
Topics selected from one of the various branches of computer science. Specific topics to be announced in the Schedule of Classes.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2023 Spring Term, 2022 Fall Term, 2022 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%205931)

COSC 6050 Elements of Software Development (3 credits)
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.
Prerequisite: Programming in a high-level language, knowledge in data structures such as stacks, recursion, queues, trees and graphs.
Level of Study: Graduate
Last four terms offered: 2022 Fall Term, 2021 Fall Term, 2020 Fall Term, 2019 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206050)

COSC 6051 Professional Software Engineering 1 (3 credits)
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.
Prerequisite: GE employee in the Software Edison program.
Level of Study: Graduate
Last four terms offered: 2020 Fall Term, 2019 Fall Term, 2018 Spring Term, 2017 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206051)

COSC 6052 Professional Software Engineering 2 (3 credits)
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.
Prerequisite: GE employee in the Software Edison program.
Level of Study: Graduate
Last four terms offered: 2020 Fall Term, 2019 Fall Term, 2018 Spring Term, 2017 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206052)

COSC 6053 Professional Software Engineering 3 (3 credits)
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.
Prerequisite: GE employee in the Software Edison program.
Level of Study: Graduate
Last four terms offered: 2020 Fall Term, 2019 Fall Term, 2018 Fall Term, 2018 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206053)

COSC 6054 Professional Software Engineering 4 (3 credits)
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.
Prerequisite: GE employee in the Software Edison program.
Level of Study: Graduate
Last four terms offered: 2020 Fall Term, 2019 Fall Term, 2018 Fall Term, 2017 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206054)

COSC 6055 Software Quality Assurance (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2021 Spring Term, 2020 Spring Term, 2019 Spring Term, 2018 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206055)

COSC 6060 Parallel and Distributed Systems (3 credits)
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.
Prerequisite: COSC 3100 or equiv.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Spring Term, 2021 Spring Term, 2020 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206060)

COSC 6090 Research Methods/Professional Development (1 credits)
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.
Level of Study: Graduate
Last four terms offered: 2022 Fall Term, 2021 Fall Term, 2021 Spring Term, 2020 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206090)

COSC 6260 Advanced Algorithms (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2022 Fall Term, 2021 Fall Term, 2020 Fall Term, 2019 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206260)

COSC 6270 Advanced Operating Systems (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2020 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206270)

COSC 6280 Advanced Computer Security (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2021 Fall Term, 2020 Fall Term, 2019 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206280)

COSC 6330 Advanced Machine Learning (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Spring Term, 2021 Spring Term, 2020 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206330)

COSC 6340 Component Architecture (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2016 Spring Term, 2011 Fall Term, 2010 Spring Term, 2008 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206340)

COSC 6345 Mobile Health (mHealth) (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2022 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206345)

COSC 6350 Distributed Computing (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2014 Spring Term, 2012 Spring Term, 2009 Spring Term, 2007 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206350)

COSC 6355 Mobile Computing (3 credits)
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.
Prerequisite: COSC 2100 or equiv.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2021 Summer Term, 2020 Summer Term, 2019 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206355)

COSC 6360 Enterprise Architecture (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2021 Fall Term, 2020 Fall Term, 2019 Fall Term, 2018 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206360)

COSC 6375 Web Technologies (3 credits)
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.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206375)

COSC 6380 Big Data Systems (3 credits)
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.
Prerequisite: Database Systems or equiv.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Spring Term, 2021 Spring Term, 2020 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206380)

COSC 6390 Professional Seminar in Computing (1 credits)
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.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2023 Spring Term, 2022 Fall Term, 2022 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206390)

COSC 6500 Foundations of Computing (7 credits)
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.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2023 Spring Term, 2022 Fall Term, 2022 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206500)

COSC 6510 Data Intelligence (3 credits)
Foundational topics in data intelligence. Includes properties and benefits for data intelligence and methodology for the development of data 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 data intelligence solutions and includes exercises using common techniques for prediction and time series analysis.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2023 Spring Term, 2022 Fall Term, 2022 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206510)

COSC 6520 Data Analytics (3 credits)
Foundational topics in the analysis of data. Includes methodology for the development of data analytics systems. Examines technology employed for data analytics in a variety of industry segments and the benefits derived from data 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 Data Intelligence before attempting COSC 6520.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2023 Spring Term, 2022 Fall Term, 2022 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206520)

COSC 6530 Concepts of Data Warehousing (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2022 Fall Term, 2021 Fall Term, 2020 Fall Term, 2019 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206530)

COSC 6550 Introduction to Cybersecurity (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2022 Fall Term, 2021 Fall Term, 2020 Fall Term, 2019 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206550)

COSC 6560 Principles of Service Management and System Administration (3 credits)
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.
Prerequisite: Basic knowledge of scripting, operating systems and services.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Spring Term, 2021 Spring Term, 2020 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206560)

COSC 6570 Data at Scale (3 credits)
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.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Spring Term, 2021 Spring Term, 2020 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206570)

COSC 6580 Data Security and Privacy (3 credits)
Focuses on fundamental and advanced topics in data security and privacy, including differential privacy, secure multi-party computation, homomorphic encryption, data perturbation, data anonymization, security and privacy in AI, location privacy, and social network privacy. Students also learn practical skills via projects.
Prerequisite: Basic knowledge on statistics, databases, machine learning/data mining, and distributed systems.
Level of Study: Graduate
Last four terms offered: 2022 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206580)

COSC 6820 Data Ethics (3 credits)
A comprehensive overview of the current ethical and social implications of our data-driven society. A sociotechnical approach is used to unpack issues of privacy and surveillance, algorithmic biases, fairness, transparency, and accountability across various contexts.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2022 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206820)

COSC 6931 Topics in Computer Science (3 credits)
Topics vary. Students may enroll more than once as the subject matter changes.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2023 Spring Term, 2022 Summer Term, 2022 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206931)

COSC 6960 Seminar in Computer Science (1-3 credits)
Seminar topics selected from one of the various branches of computer science. Specific topics to be announced in the Schedule of Classes.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Fall Term, 2022 Spring Term, 2021 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206960)

COSC 6964 Practicum for Research and Development in Computing (3-6 credits)
S/U grade assessment. Available only to full-time students. Cons. of the computing dir. of graduate studies or cons. of dept. ch.
Prerequisite: 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.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2023 Spring Term, 2022 Fall Term, 2022 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206964)

COSC 6965 Curriculum Integrated Practicum in Computing (1-2 credits)
Involves practical application of the knowledge and skills being studied concurrently, and previously studied, in other course work for computing professionals.
Prerequisite: Admission to the COMP program's integrated practicum option; cons. of the computing dir. of graduate studies or cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2022 Spring Term, 2021 Fall Term, 2021 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206965)

COSC 6974 Practicum for Research and Development in Computer Science (1-6 credits)
Students in the MS in Computing program should be registering for COSC 6964, Practicum for Research and Development in Computing. S/U grade assessment.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Fall Term, 2022 Summer Term, 2022 Spring Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206974)

COSC 6975 Curriculum Integrated Practicum in Computer Science (0 credits)
Involves advancing practical research and development of the computer science doctoral program student.; cons. of the co-op chair or grad. chair or dept. chair.
Prerequisite: Admitted to the COSC-PHD prog.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206975)

COSC 6995 Independent Study in Computer Science (1-6 credits)
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.
Prerequisite: Cons. of instr. and cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2023 Spring Term, 2022 Fall Term, 2022 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206995)

COSC 6998 Professional Project in Computer Science (0 credits)
SNC/UNC grade assessment.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Spring Term, 2021 Fall Term, 2021 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206998)

COSC 6999 Master's Thesis (1-6 credits)
S/U grade assessment.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Spring Term, 2021 Fall Term, 2021 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%206999)

COSC 8995 Independent Study in Computer Science (1-3 credits)
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.
Prerequisite: Cons. of instr. and cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Fall Term, 2022 Spring Term, 2021 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%208995)

COSC 8999 Doctoral Dissertation (1-12 credits)
S/U grade assessment.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2023 Spring Term, 2022 Fall Term, 2022 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%208999)

COSC 9970 Graduate Standing Continuation: Less than Half-Time (0 credits)
Fee. SNC/UNC grade assessment. Designated as less than half-time status only, cannot be used in conjunction with other courses, and does not qualify students for financial aid or loan deferment.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Fall Term, 2022 Spring Term, 2021 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209970)

COSC 9974 Graduate Fellowship: Full-Time (0 credits)
Fee. SNC/UNC grade assessment. Designated as full-time status. If a student is already registered in other courses full time, this continuation course is not needed.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209974)

COSC 9975 Graduate Assistant Teaching: Full-Time (0 credits)
Fee. SNC/UNC grade assessment. Designated as full-time status. If a student is already registered in other courses full time, this continuation course is not needed.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209975)

COSC 9976 Graduate Assistant Research: Full-Time (0 credits)
Fee. SNC/UNC grade assessment. Designated as full-time status. If a student is already registered in other courses full time, this continuation course is not needed.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2021 Spring Term, 2020 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209976)

COSC 9987 Doctoral Qualifying Examination Preparation: Less than Half-Time (0 credits)
Fee. SNC/UNC grade assessment. Allows a student to be considered the equivalent of less than half-time status. Requires that the student is working less than 12 hours per week toward their doctoral qualifying exam.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2021 Spring Term, 2020 Fall Term, 2019 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209987)

COSC 9988 Doctoral Qualifying Examination Preparation: Half-Time (0 credits)
Fee. SNC/UNC grade assessment. Allows a student to be considered the equivalent of half-time status. Requires that the student is working more than 12 to less than 20 hours per week toward their doctoral qualifying exam. May be taken in conjunction with credit-bearing or other non-credit courses to result in the status indicated, as deemed appropriate by the department.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2022 Spring Term, 2021 Fall Term, 2021 Spring Term, 2020 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209988)

COSC 9989 Doctoral Qualifying Examination Preparation: Full-Time (0 credits)
Fee. SNC/UNC grade assessment. Allows a student to be considered the equivalent of full-time status. Requires that the student is working 20 hours or more per week toward their doctoral qualifying exam. May be taken in conjunction with credit-bearing or other non-credit courses to result in the status indicated, as deemed appropriate by the department.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2023 Spring Term, 2022 Fall Term, 2022 Spring Term, 2021 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209989)

COSC 9991 Professional Project Continuation: Less than Half-Time (0 credits)
Fee. SNC/UNC grade assessment. Allows a student to be considered the equivalent of less than half-time status. Requires that the student is working less than 12 hours per week on their professional project. Any professional project credits required for the degree should be completed before registering for non-credit Professional Project Continuation.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209991)

COSC 9992 Professional Project Continuation: Half-Time (0 credits)
Fee. SNC/UNC grade assessment. Allows a student to be considered the equivalent of half-time status. Requires that the student is working more than 12 to less than 20 hours per week on their professional project. Any project credits required for the degree should be completed before registering for non-credit Professional Project Continuation.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209992)

COSC 9993 Professional Project Continuation: Full-Time (0 credits)
Fee. SNC/UNC grade assessment. Allows a student to be considered the equivalent of full-time status. Requires that the student is working 20 hours or more per week on their professional project. Any professional project credits required for the degree should be completed before registering for non-credit Professional Project Continuation.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209993)

COSC 9994 Master's Thesis Continuation: Less than Half-Time (0 credits)
Fee. SNC/UNC grade assessment. Allows a student to be considered the equivalent of less than half-time status. Requires that the student is working less than 12 hours per week on their master's thesis. All six thesis credits required for the degree should be completed before registering for non-credit Master's Thesis Continuation.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2020 Summer Term, 2019 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209994)

COSC 9995 Master's Thesis Continuation: Half-Time (0 credits)
Fee. SNC/UNC grade assessment. Allows a student to be considered the equivalent of half-time status. Requires that the student is working more than 12 to less than 20 hours per week on their master's thesis. All six thesis credits required for the degree should be completed before registering for non-credit Master's Thesis Continuation.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2022 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209995)

COSC 9996 Master's Thesis Continuation: Full-Time (0 credits)
Fee. SNC/UNC grade assessment. Allows a student to be considered the equivalent of full-time status. Requires that the student is working 20 hours or more per week on their master's thesis. All six thesis credits required for the degree should be completed before registering for non-credit Master's Thesis Continuation.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2022 Fall Term, 2022 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209996)

COSC 9997 Doctoral Dissertation Continuation: Less than Half-Time (0 credits)
Fee. SNC/UNC grade assessment. Allows a student to be considered the equivalent of less than half-time status. Requires that the student is working less than 12 hours per week on their doctoral dissertation. All 12 dissertation credits required for the degree should be completed before registering for non-credit Doctoral Dissertation Continuation.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209997)

COSC 9998 Doctoral Dissertation Continuation: Half-Time (0 credits)
Fee. SNC/UNC grade assessment. Allows a student to be considered the equivalent of half-time status. Requires that the student is working more than 12 to less than 20 hours per week on their doctoral dissertation. All 12 dissertation credits required for the degree should be completed before registering for non-credit Doctoral Dissertation Continuation.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2021 Fall Term, 2020 Fall Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209998)

COSC 9999 Doctoral Dissertation Continuation: Full-Time (0 credits)
Fee. SNC/UNC grade assessment. Allows a student to be considered the equivalent of full-time status. Requires that the student is working 20 hours or more per week on their doctoral dissertation. All 12 dissertation credits required for the degree should be completed before registering for non-credit Doctoral Dissertation Continuation.
Prerequisite: Cons. of dept. ch.
Level of Study: Graduate
Last four terms offered: 2023 Summer Term, 2023 Spring Term, 2022 Fall Term, 2022 Summer Term
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=COSC%209999)