Biomedical Sciences, MS

Program Director: Maria Crowe, Ph.D.
Director of Graduate Studies: SuJean Choi, Ph.D.

Biomedical Sciences website (https://www.marquette.edu/grad/biomedical-sciences-masters.php)

DEGREE OFFERED

Master of Science

Program Description

The 15-month master of science in biomedical sciences program provides graduates with extensive knowledge, skills and expertise to function in a variety of biomedical professions. Through career practicums, didactic biomedical course work, and a culminating scholarly project or paper, students are well-positioned to directly enter biomedical workforce in industry, academia or governmental labs or to pursue further study in graduate or health professional programs. In addition, students have the option of developing an individual plan of study that includes multiple areas of biomedical sciences or they can select one of the two specialization tracks in either anatomical sciences or neuroscience.

LEARNING OUTCOMES

Upon completion of the program, students will be able to:

1. Explain fundamental principles in biomedical sciences and synthesize advanced knowledge within specific biomedical subjects.
2. Demonstrate the ability to apply analytical approaches, problem solving skills, critical thinking skills, and critical evaluation of scientific literature used in biomedical sciences.
3. Demonstrate effective professional communication and presentation skills, both verbal and written.
4. Demonstrate competency in career-enabling skill sets consistent with the student's interest of research or instructional techniques used in biomedical sciences.
5. Exhibit professionalism and interpersonal skills required of a professional biomedical scientist.

ACADEMIC STANDARDS

A cumulative GPA of 2.500 (based on a 4.000 scale) is required through the first 9 attempted credits. Beyond 9 credits, a cumulative GPA of 3.000 is required. The Policies tab describes the criteria and procedures for academic warnings, probation, removal of probation and dismissal. The program strictly follows these policies and procedures.

The master of science in biomedical sciences requires a minimum of 30 credit hours at the 5000-level or above, including at least 18 credit hours of BISC course work. Within the 30 credit hours, a student also completes a 3 credit scholarly project or a scholarly paper and 3 additional elective credits. The program of course work is determined in consultation with the student's adviser. Each student is advised to take courses that are properly related to their academic background, prior experience and interests.

Code	Title	Hours
BISC 5145	Human Physiology	4
Career Skills Core		**6**
BISC 6010	Laboratory Fundamentals	
or BISC 6956	Scientific Pedagogy Seminar	
BISC 6964	Career Practicum	
Professional Development Core (three courses)		**0**
BISC 6005	Professional Development 1	
BISC 6006	Professional Development 2	
BISC 6007	Professional Development 3	
Scholarly Project or Paper Requirement		**3**
BISC 6998	Scholarly Project	
or Scholarly Paper and 3 cr. Electives		
Specialization and/or Elective courses per approved plan of study		**17**
Total Credit Hours:		**30**

Specializations

Students have the option of completing a specialization as part of their degree program. The available specializations are 1) anatomical sciences and 2) neuroscience. Students not completing a specialization must have a plan of study approved by the director of graduate studies before completion of their first term in the program.

Anatomical Sciences Specialization (15 credits)

Code	Title	Hours
BISC 5140	Functional Neuroanatomy	3
BISC 5173	Principles of Human Embryology	3
BISC 6140	Advanced Studies in Human Gross Anatomy	5
BISC 7514	Human Microanatomy	4
Total Credit Hours:		**15**

Neuroscience Specialization (15 credits)

Code	Title	Hours
BISC 5020	Molecular Neuroscience	3
BISC 5850	Systems Neuroscience	3
Neuroscience Electives - choose three of the following:		9
BISC 5010	Neuroeconomics: The Neuroscience of Decision Making	
BISC 5140	Functional Neuroanatomy	
BISC 5155	Diseases of the Brain	
BISC 5173	Principles of Human Embryology	
BISC 5325	Endocrinology	
Total Credit Hours:		**15**

Elective Courses

Suggested elective courses options are listed below. Other graduate-level courses within the BISC department or across the university may be taken with approval of the director of graduate studies.

Code	Title	Hours
BISC 5010	Neuroeconomics: The Neuroscience of Decision Making	3
BISC 5020	Molecular Neuroscience	3
BISC 5112	Head and Neck Anatomy	3
BISC 5135	Clinical Human Anatomy	4
BISC 5140	Functional Neuroanatomy	3
BISC 5155	Diseases of the Brain	3
BISC 5160	Human Molecular Pathology and Clinical Therapeutics	3
BISC 5173	Principles of Human Embryology	3
BISC 5325	Endocrinology	3
BISC 5340	Human and Applied Medical Genetics	3
BISC 5341	Advanced Cellular Genetics and Cancer	1
BISC 5342	Epigenetics and Human Disease	3
BISC 5850	Systems Neuroscience	3
BISC 5964	AI and Machine Learning Practicum in Neuroscience	1-3
BISC 6030	Programming for Research	3
BISC 6035	Advanced Statistics and Research Methods	3
BISC 6040	Advanced Lab Techniques 1	2-3
BISC 6041	Advanced Lab Techniques 2	2-3
BISC 6050	Discovery to Translation and Beyond	3
BISC 6060	Biotech Entrepreneurship: The Business of Doing Science	3
BISC 6097	Laboratory Research in Neuroscience	1
BISC 6140	Advanced Studies in Human Gross Anatomy	5
BISC 6931	Topics in Biomedical Sciences	1-3

BISC 6995	Independent Study in Biomedical Sciences	1-6
BISC 7021	Medical and Dental Terminology	1
BISC 7130	Human Gross Anatomy	5
BISC 7213	Clinical Biochemistry	4
BISC 7215	Clinical Microbiology with Lab	4
BISC 7220	Medical Pharmacology	3
BISC 7514	Human Microanatomy	4
BIOL 5102	Experimental Molecular Biology	3
BIOL 5201	Genomics and Bioinformatics	3
BIOL 5401	Advanced Ecology	3
BIOL 5404	Molecular Evolution	3
BIOL 5501	Cellular Neurobiology	3
BIOL 5806	Immunobiology	3

Professional Project

In a project, students demonstrate familiarity with the tools of the research and scholarship in the major field, show thorough knowledge of the subject covered and reflect independent thought, critical insight and originality. The project must be acceptable to the department in style and composition. Formatting of the professional project is at the discretion of the BISC Department.

A Master's Thesis/Essay/Professional Project/Publication DocuSign form must be submitted on or before the deadlines listed in the Academic Calendar.

University Policies

- Academic Advising (https://bulletin.marquette.edu/policies/academic-advising/)
- Academic Censure - Health Science Professional (https://bulletin.marquette.edu/policies/academic-censure/healthscienceprofessional/)
- 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 - Health Science Professional (https://bulletin.marquette.edu/policies/attendance/healthscienceprofessional/)
- 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/)
- 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 - Health Science Professional (https://bulletin.marquette.edu/policies/credit-load/healthscienceprofessional/)
- 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 - Undergraduate and Health Science Professional (https://bulletin.marquette.edu/policies/grading-system/undergraduate-healthscienceprofessional/)
- Graduation - Health Science Professional (https://bulletin.marquette.edu/policies/graduation/healthscienceprofessional/)
- 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/)
- Medical Withdrawal (https://bulletin.marquette.edu/policies/medical-withdrawal/)
- Military Call to Active Duty or Training (https://bulletin.marquette.edu/policies/militarycall-active-duty-training/)
- Registration - Health Science Professional (https://bulletin.marquette.edu/policies/registration/healthscienceprofessional/)
- Repeated Courses - Health Science Professional (https://bulletin.marquette.edu/policies/repeated-courses/healthscienceprofessional/)
- Student Consumer Complaints (https://bulletin.marquette.edu/policies/student-complaints/)
- 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 - Health Science Professional (https://bulletin.marquette.edu/policies/transfer-course-credit-policy/healthscienceprofessional/)
- Withdrawal - Health Science Professional (https://bulletin.marquette.edu/policies/withdrawals/healthscienceprofessional/)

BISC 5010 Neuroeconomics: The Neuroscience of Decision Making (3 credits)
Designed for students who have an understanding of the fundamentals of neuroscience and would like to learn more about how specific brain processes contribute to the decision to follow a course of action. Topics include valuation, learning, emotion, social behavior and action selection.
Prerequisite: Admitted to the BISC-MS program; or cons. of instr.
Level of Study: Graduate
Marquette Core Curriculum: NSM Cgntn, Lang, Mmry/Intlgnc
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205010)

BISC 5020 Molecular Neuroscience (3 credits)
Examines living brains at the most fundamental level – that of ions, molecules, membrane structures and cells. Touches upon the molecular machinery responsible for information processing by neuronal and non-neuronal brain cells. Focuses on the common motifs involved in intra and inter-cellular communication, including membrane excitability, electrochemical signal transduction, synaptic transmission and short and long-term storage of memories. Uses this information to gain insight into the mechanistic basis of a range of brain states.
Prerequisite: Admitted to the BISC-MS program; or cons. of instr.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205020)

BISC 5112 Head and Neck Anatomy (3 credits)
Survey of neuroanatomy, sensory systems and speech, muscular and vascular systems, and osteology of the head and neck. An emphasis is placed on functional anatomy and significant clinical correlates. Laboratory included. Not to be taken for credit by students who are enrolled in or have earned credit for BISC 4113.
Prerequisite: Admitted to the BISC-MS program.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205112)

BISC 5135 Clinical Human Anatomy (4 credits)
A regional approach to human anatomy where all body systems are integrated. Emphasizes correlations between structure and function. Laboratory included.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205135)

BISC 5140 Functional Neuroanatomy (3 credits)
Examines the basic structure and function of the central nervous system from spinal cord to cerebral cortex. Material is presented within both clinical and basic contexts. Based on the understanding of the normal circuitry and function of the brain, students progress toward developing the preliminary skills to diagnose or explain clinically relevant neurological disorders. Laboratory included.
Prerequisite: Enrolled in the BISC pre-dental enhancement program or NRSC doctoral program.
Level of Study: Graduate
Marquette Core Curriculum: NSM Cgntn, Lang, Mmry/Intlgnc
Interdisciplinary Studies: Cognitive Science
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205140)

BISC 5145 Human Physiology (4 credits)
Human physiology including blood and circulation, muscular, neuronal and sensory systems, renal and respiratory systems, digestion, metabolism, reproduction, their control by the endocrine and central nervous systems, and clinical correlates.
Prerequisite: Enrolled in the BISC pre-dental enhancement program.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205145)

BISC 5155 Diseases of the Brain (3 credits)
Examines pathological states involving the central nervous system to better understand brain function. Presents opportunities to develop critical thinking skills, utilize the scientific method and explore how research investigates the complexity of brain function, while developing a deeper understanding of the neurosciences. Explores how deficits in cognition and other aspects of brain function provides insight into normal brain function and what it means to be human, by focusing on diseases of the brain.
Prerequisite: Enrollment in the NRSC doctoral program; or cons. of instr.
Level of Study: Graduate
Marquette Core Curriculum: NSM Cgntn, Lang, Mmry/Intlgnc
Interdisciplinary Studies: Cognitive Science
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205155)

BISC 5160 Human Molecular Pathology and Clinical Therapeutics (3 credits)
Presents an overview of the cellular and molecular mechanisms of major human diseases. Pathologies examined include metabolic (Obesity, Diabetes, cardiovascular), neoplastic cancer, neurodegenerative (Alzheimer, Parkinson, Huntington, ALS), and neuropsychiatric (Depression, Schizophrenia, Autism, Stress) diseases. Explores the mechanism of action of clinical interventions and FDA-approved therapeutics. Provides the opportunity to develop critical thinking skills by integrating multi-faceted information about human pathologies. It is a great primer for pre-professional students.
Level of Study: Graduate
Marquette Core Curriculum: NSM Expanding Our Horizons
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205160)

BISC 5170 Biology, Moral Behavior and Policy (3 credits)
A multidisciplinary approach to moral decision making as it relates to public policy in healthcare. Examines the foundation of moral behavior and advances to the neural substrates of decision making with an emphasis on the learning, reward processing, and emotional systems that control behavior. Also incorporates discussions of specific ethical issues in biomedical sciences, paying particular attention to the nature of the dilemma and the voices guiding public policy. BISC 4170 can apply to either the Health and Society cognate, or the BISC major electives, but not both.
Prerequisite: Admitted to the BISC-MS program; or cons. of instr.
Level of Study: Graduate
Marquette Core Curriculum: NSM Individuals & Communities
Interdisciplinary Studies: Cognitive Science
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205170)

BISC 5173 Principles of Human Embryology (3 credits)
System by system approach to the understanding of the sequence of human embryonic and fetal development. Covers early events, including gametogenesis, implantation and placentation, to give a foundation for discussing the development of major organ systems. Discusses the underlying causes of morphological errors in development which lead to congenital malformations. Stresses the effects of harmful (teratogenic) substances early in the developmental period. Provides a basic understanding of early inductive influences on major organ systems.
Prerequisite: Enrolled in the BISC pre-dental enhancement program.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205173)

BISC 5325 Endocrinology (3 credits)
Introduction to the field of endocrinology. Focuses on understanding the endocrine system, principles of hormone regulation, hormone signaling mechanisms and endocrine disorders. Topics include reproduction, stress responses, metabolic function, growth and homeostasis.
Prerequisite: Enrolled in the BISC pre-dental enhancement program or NRSC doctoral program.
Level of Study: Graduate
Marquette Core Curriculum: NSM Basic Needs & Justice, Writing Intensive
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205325)

BISC 5340 Human and Applied Medical Genetics (3 credits)
Provides an overview of genetic principles that are relevant to human health and disease. Topics include: packaging and sequence architecture of the human genome, Human Genome Project, patterns of Mendelian inheritance in humans, development, genetic alterations and metabolic disease hemoglobinopathies, immunogenetics, genetic testing and gene therapy. Consists of didactic lectures with interspersed clinical cases. Intended for students interested in a career in medical professions.
Prerequisite: Enrolled in the BISC pre-dental enhancement program.
Level of Study: Graduate
Marquette Core Curriculum: NSM Expanding Our Horizons
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205340)

BISC 5341 Advanced Cellular Genetics and Cancer (1 credits)
A discussion-based focus on current advances in cellular genetics and cancer research. Students discuss current articles from the news or the primary literature related to the class topics. Includes a lecture component to provide background information for each topic.
Prerequisite: Admitted to the BISC-MS program.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205341)

BISC 5342 Epigenetics and Human Disease (3 credits)
Focuses on epigenetic processes in humans and the epigenetic basis of human diseases. Provides a foundation for biomedical science and biology students, particularly pre-med and pre-health students.
Prerequisite: Admitted to the BISC-MS program.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205342)

BISC 5850 Systems Neuroscience (3 credits)
Broad overview of neural systems supporting perception, learning and behavior. Highly integrative with various thematic content, including functional organization of the nervous system, sensory and motor systems, neural encoding, motivation, emotion, learning and memory. Discusses the application of each topic to mental health.
Level of Study: Graduate
Marquette Core Curriculum: NSM Cgntn, Lang, Mmry/Intlgnc
Interdisciplinary Studies: Cognitive Science
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205850)

BISC 5964 AI and Machine Learning Practicum in Neuroscience (1-3 credits)
Internship-style opportunity where students learn and apply modern machine learning and artificial intelligence techniques in neuroscience. Students are expected to be either already familiar with basics of Python or other equivalent programming language, or be willing to rapidly learn under researcher guidance.
Prerequisite: Consent required.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%205964)

BISC 6005 Professional Development 1 (0 credits)
Addresses the professional skills for students to become successful in the workplace. Includes career discernment, resume/CV construction, interviewing skills and communication skills. S/U grade assessment.
Prerequisite: Admitted to the BISC-MS prog.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206005)

BISC 6006 Professional Development 2 (0 credits)
Addresses the professional skills for students to become successful in the workplace. Includes career discernment, resume/CV construction, interviewing skills and communication skills. S/U grade assessment.
Prerequisite: Admitted to the BISC-MS prog.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206006)

BISC 6007 Professional Development 3 (0 credits)
Addresses the professional skills for students to become successful in the workplace. Includes career discernment, resume/CV construction, interviewing skills and communication skills. S/U grade assessment.
Prerequisite: Admitted to the BISC-MS prog.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206007)

BISC 6010 Laboratory Fundamentals (2 credits)
Explores the essential principles required for a biomedical sciences laboratory setting. Studies fundamental laboratory principles, proper lab hygiene, safety protocols, and regulatory compliance within a research or biotech laboratory environment through hands-on experiences. Emphasizes bench techniques for foundational molecular and cellular assays. Covers data management and documentation methods required to ensure rigorous and reproducible scientific experiments from design to implementation to analysis.
Prerequisite: Enrolled in the BISC-MS prog.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206010)

BISC 6030 Programming for Research (3 credits)
Introductory level of programming skills in Python and R. Students apply these skills to problems in biomedical research and health science services.
Prerequisite: Admitted to the BISC-MS prog.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206030)

BISC 6035 Advanced Statistics and Research Methods (3 credits)
The conceptual bases underlying descriptive and inferential statistics and application to construct and test hypotheses using sound research methods.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206035)

BISC 6040 Advanced Lab Techniques 1 (2-3 credits)
Develops skills and competencies needed for a career in biomedical research. Builds on the essential principles of proper lab hygiene, safety protocols and regulatory compliance, along with data management and documentation strategies. Provides experience and understanding on more advanced techniques including histology, cell culture, immunohistochemistry, fluorescent imaging, western blotting and molecular genetics, as well as the proper and ethical usage of small animals in biomedical research.
Prerequisite: Enrolled in the BISC-MS prog. or NRSC prog.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206040)

BISC 6041 Advanced Lab Techniques 2 (2-3 credits)
Continues the exploration of advanced techniques found in a modern neuroscience research lab. Examines the theory behind each technique and develops competency at the bench. Advanced techniques explored may include electrophysiology, HPLC, fluorescence-based cell sorting, 2-photon microscopy, and in-vivo neural circuit manipulation strategies
Prerequisite: BISC 6040 and enrolled in the BISC-MS prog. or NRSC prog.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206041)

BISC 6050 Discovery to Translation and Beyond (3 credits)
Overview of the biomedical sciences discovery to translation process. Placing biomedical innovations in a societal context, the role of the drug discovery process, intellectual property and the multi-modal types of therapeutics development is discussed. The approach focuses on how the pharmaceutical industry conducts discovery to translation R&D.
Prerequisite: Enrolled in BISC-MS program.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206050)

BISC 6060 Biotech Entrepreneurship: The Business of Doing Science (3 credits)
Overview of the biotechnology commercialization process. Placing biotech innovations in a societal context, the role of intellectual property, government policies and regulations, marketplace economics and ethical debates on the development and commercialization of new life science technologies is discussed. The approach focuses on both large enterprise models as well as smaller entrepreneurial approaches to technology commercialization and the principles needed to translate research from a lab bench to the marketplace.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206060)

BISC 6097 Laboratory Research in Neuroscience (1 credits)
Independent research of second year graduate students based on their dissertation research laboratory; includes lab group meetings, literature research, bench work and presentation of findings.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206097)

BISC 6140 Advanced Studies in Human Gross Anatomy (5 credits)
In-depth study of the limbs, back, thorax, abdomen, pelvis, head and neck regions of the human body through both dissections and interactive didactic modules.
Prerequisite: College anatomy course; enrolled in BISC-MS program.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206140)

BISC 6931 Topics in Biomedical Sciences (1-3 credits)
Selected topics in biomedical sciences. Specific topics will be designated in the Schedule of Classes.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206931)

BISC 6956 Scientific Pedagogy Seminar (2 credits)
Provides basic skills in pedagogy for instruction in upper-level science courses. Includes syllabus design, assessment methods and student engagement, as well as creative curriculum design.
Prerequisite: Admitted to the BISC-MS prog.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206956)

BISC 6964 Career Practicum (2 credits)
Prepares the student with hands-on career-enabling skills and experiences depending on the focus the student chooses. Includes a career skill seminar (laboratory focus: laboratory techniques and management; instructional focus: science pedagogy and instruction), a career practicum (laboratory focus: collaboratory or faculty research lab or industry lab; instructional focus: mentored experience in classroom learning).
Prerequisite: Enrolled in BISC-MS program.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206964)

BISC 6995 Independent Study in Biomedical Sciences (1-6 credits)
Research on a selected topic under the direction of a faculty member of the Department of Biomedical Sciences.
Prerequisite: Cons. of dept. ch. Consent required.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206995)

BISC 6998 Scholarly Project (3 credits)
Identification of a gap of knowledge and formulate, implement and present a scholarly or a laboratory research-based project that results in a tangible product which contributes to and enhances biomedical sciences knowledge, biomedical laboratory advancement and/or pedagogy.
Prerequisite: Enrolled in BISC-MS program.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%206998)

BISC 8003 Individual Development Plan (1 credits)
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 NRSC 8003; credit is not awarded for both.
Prerequisite: Cons. of instr. Consent required.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%208003)

BISC 8004 Science Writing and Ethics 1 (1 credits)
An introduction of scientific writing skills necessary for a successful career in science. Same as NRSC 8004; credit is not awarded for both.
Prerequisite: BISC 8003 or NRSC 8003.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%208004)

BISC 8005 Science Writing and Ethics 2 (1 credits)
Advanced writing skills necessary for grant writing. Same as NRSC 8005; credit is not awarded for both.
Prerequisite: BISC 8004 or NRSC 8004.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%208005)

BISC 8096 First Year Lab Rotations (1 credits)
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 NRSC 8096; credit is not awarded for both.
Prerequisite: Cons. of instr. Consent required.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%208096)

BISC 8101 Biology of Cellular Signal Transduction (2 credits)
Focuses on the mechanisms by which cells detect and respond to extracellular signals including neurotransmitters, hormones and growth factors. Discusses fundamental principles and key examples of cellular signal processing. Centered on the discussion of review articles and key papers from primary literature. Consent required.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%208101)

BISC 8931 Topics in Biomedical Sciences (1-3 credits)
Subject matter varies as determined by needs of neuroscience graduate students. May be repeated, as subject matter changes. Same as NRSC 8931; credit is not awarded for both.
Prerequisite: Cons. of instr. Consent required.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%208931)

BISC 8953 Seminar in Neuroscience (1 credits)
Topics of current interest in neuroscience. Same as NRSC 8953; credit is not awarded for both.
Prerequisite: Cons. of instr. Consent required.
Level of Study: Graduate
Schedule of Classes (https://bulletin.marquette.edu/class-search/?details&code=BISC%208953)