# **INTEGRATED BIOMEDICAL** SCIENCES (IBMS)

### Courses

#### IBMS 5000. Fundamentals Of Biomedical Sciences. 8 Credit Hours.

This core course covers the fundamentals of biochemistry, molecular biology, cell biology, organismal and systems biology, and microbiology and immunology. The course is designed for first-year graduate students matriculating into the Integrated Biomedical Sciences Program (IBMS).

#### IBMS 5008. Lab Rotations. 1-3 Credit Hours.

This course provides an opportunity for students to participate in research activities in the laboratories of faculty members in different disciplines to learn laboratory skills and to gain an introduction to the research fields of faculty members.

#### IBMS 6090. Seminar. 1.5 Credit Hour.

This course is required of all students in the IBMS program, except of those who have signed up for Final Hours. Students are required to attend a minimum of 16 seminars per semester and to complete a requirement to demonstrate their attendance and participation. To fulfill the minimum number of seminars, students may include seminars offered by disciplines other than their own in which they are enrolled. However, to enroll, students should obtain permission from the course Section Director affiliated with the appropriate discipline. The course numbers of the individual course sections are INTD 6090-1GEN, 6090-2BA, 6090-3CB, 6090-4CGM, 6090-5MIM, 6090-6MBB, 6090-7NS and 6090-8PP for the IBMS Disciplines: Biology of Aging (BA), Cancer Biology (CB), Cell Biology, Genetics & Molecular Medicine (CGM), Molecular Biophysics & Biochemistry (MBB), Molecular Immunology & Microbiology (MIM), Neuroscience (NS), and Physiology & Pharmacology (PP). Some students who have not declared a discipline, and have obtained the approval of their academic advisor and the Senior Associate Dean of the GSBS, may sign up for INTD 6090-1GEN. Grading will be Satisfactory or Unsatisfactory. A list of seminars from all disciplines will be posted on the Graduate School Web site. Each Section Director will determine, for the relevant IBMS-6090 section, the policy for tracking student's attendance and participation in seminars.

#### IBMS 6097. Research. 0.5-12 Credit Hours.

This course involves independent, original research under the direction of a faculty advisor.

#### IBMS 6098. Thesis. 1-9 Credit Hours.

Registration for at least one term is required for M.S. candidates. Prerequisite: Admission to candidacy for the Master of Science degree is required.

#### IBMS 7001. Qualifying Exam. 1 Credit Hour.

The objective of the Qualifying Examination (QE) is to determine if a student has met programmatic expectations with regard to: i) Acquiring a level of scientific reasoning and a knowledge base in his/her field of study appropriate for a graduate student at the current stage of training; ii) Demonstrating skills of problem-solving and development of experimental strategies designed to test hypotheses associated with a specific scientific problem; and iii) Demonstrating the ability to defend experimental strategies proposed for solving scientific problems. Successful completion of the QE is required for Advancement to Candidacy and continuation in the IBMS Ph.D. program. During the Spring semester of Year 2 (4th semester overall) of the student's program, the QE will be administered by a faculty committee approved by a student's Discipline leadership. Each IBMS discipline will administer the QE process for its students so as to achieve the goals of the discipline while satisfying the expectations of the IBMS graduate program. In general, the QE requires the solving of a relevant unsolved problem in the biomedical sciences by writing a research proposal based on an idea conceived and developed by the student, followed by an oral defenseof-proposal to explore the student's problem-solving process, and the soundness of the student's experimental design. Following the QE, a report will be submitted by the chair of the examination committee to the student's discipline leadership indicating the outcome of the exam and any recommendations that may be required to foster further academic progress by the student. IBMS 7001 is divided into 7 modules overseen by the 7 IBMS Disciplines, each that is responsible for providing its students with a detailed description of the examination process, and for ensuring that the programmatic expectations and goals of the QE are met.

## IBMS 7010. Student Journal Club & Research Presentation. 1-2 Credit Hours.

This course is designed to provide graduate students with experience in critical reading of the primary literature, seminar preparation and presentation, data analysis and interpretation, and group-based learning as they relate to the graduate program in Integrated Biomedical Sciences. This course is required of all students in the IBMS program starting in their second year except of those who have signed up for Final Hours. Students are required to attend a minimum of 16 total presentations per semester (journal club or research presentations) and to complete a requirement to demonstrate their attendance and participation. Students are also required to present one journal club presentation per semester until they are Advanced to Candidacy. Once Advanced to Candidacy, the student will present one journal club presentation per academic year and one research presentation per academic year such that the student is giving at least one presentation in each semester. To enroll, students should obtain permission from the course Section Director affiliated with the appropriate discipline. The course numbers of the individual course sections are INTD 7010-1GEN, 7010-2BA, 7010-3CB, 7010-4CGM, 7010-5MIM, 7010-6MBB, 7010-7NS and 7010-8PP for the IBMS Disciplines: Biology of Aging (BA), Cancer Biology (CB), Cell Biology, Genetics & Molecular Medicine (CGM), Molecular Biophysics & Biochemistry (MBB), Molecular Immunology & Microbiology (MIM), Neuroscience (NS), and Physiology & Pharmacology (PP). Some students who have not declared a discipline, and have obtained the approval of their academic advisor and the Senior Associate Dean of the GSBS, may sign up for INTD 7010-1GEN. Grading will be by letter grade (A, B, C, etc). A list of journal clubs from all disciplines will be posted on the Graduate School Web site. Each Section Director will determine, for the relevant IBMS 7010 section, the policy for tracking student's attendance and participation and will be responsible for assigning a final grade.

#### IBMS 7099. Dissertation. 1-12 Credit Hours.

This course involves independent, original research under the direction of a faculty advisor and is designed to allow graduate students time to write their doctoral dissertations and to receive guidance from their Dissertation Supervising Committees. Enrollment in IBMS 7099 with discipline designations typically requires course permissions which is granted by the discipline coordinator or director.