Molecular Biosciences Core Curriculum

Fall

16:695:538 Fundamentals of Molecular Biosciences
6 credits
Tuesday, Wednesday, Thursday 10:00 a.m. to 12:00 p.m.

Foundational material necessary for graduate students to become fluent in the language of modern molecular and cellular biology, genetics and biochemistry in order to engage in experimentally based discovery. Through textbook and supplemental readings, instructor led lecture and discussion, students will establish the foundational knowledge base on which to build critical reasoning skills and identify open questions in molecular biosciences.

16:695:539 Experimental Methods in Molecular Biosciences
2 credits
Friday, 10:00 a.m. to 12:00 p.m.

Emphasizes experimental methodologies underlying foundational concepts in molecular biosciences. Through reading and discussion of a range of primary papers, students will become familiar with essential experimental approaches, as well as the importance of proper controls, data interpretation and quantitative methods to address problems in molecular biosciences.

16:695:551 Essential Skills I
1 credit
Monday, 10:00 a.m. – 12:00 p.m.

Presents students with basic skills needed in a biological research setting. Topics range from expectations for graduate school and managing student-advisor relationships, to basic laboratory calculations, hands-on use of tools for communicating science and applications of basic statistics. Students will be introduced to tools for management of the scientific literature, including database searching for relevant papers, and how to cite references properly. Students will engage in hands on use of presentation software and bioinformatics tools. Funding opportunities and grant writing will be introduced to students, so they will be better prepared for future opportunities to submit their own fellowship applications.

16:695:615 Laboratory Rotations
3 credits
by arrangement

16:695:600 Progress Reports of Graduate Students in Molecular Biosciences
0 credits
Thursday, 4:00 p.m. – 5:00 p.m.

Students reflect on and synthesize their research progress over the previous year and practice public speaking to a broad scientific audience. Students in the audience are exposed to the array of techniques and approaches used by their colleagues and have the opportunity to ask questions in a comfortable environment. Research presentations are delivered by students in year 2 and beyond. Each week, two students give 25-minute oral presentations with slides. Students are asked to provide context for their research project, describe their progress and future goals, and field questions from the audience.

Total credits for fall semester: 12 credits

Spring

16:695:621-636 Mini-Courses in Molecular Biosciences
1 credit each; select 6 for a total of 6 credits
2 days/week for 90 minutes each-days and times vary depending on course

Students will select from a collection of short courses, each spanning a period of four weeks. Two courses will be taken simultaneously in three blocks, for a total of six one-credit courses. Courses are designed to engage students in reading, analyzing and discussing the literature, giving oral or written presentations, or carrying out independent or group projects that require active participation on the part of the student. Topics will be methods-based and/or discovery-based and will cover the broad range of interests reflected by the faculty in the programs in molecular biosciences.

16:695:552 Essential Skills II
1 credit
Friday, 9:00 a.m. – 10:00 a.m.

Continuation of Essential Skills I

16:115:556 Ethical Scientific Conduct
1 credit
Monday, 4:00 p.m. to 5:00 p.m.

Discusses the definitions of and ethical problems caused by fabrication of data, falsification of results, plagiarism, and other behaviors inconsistent with ethical scientific conduct.

16:695:616 Laboratory Rotations
3 credits
by arrangement

16:695:600 Progress Reports of Graduate Students in Molecular Biosciences
0 credits
Thursday, 12:15 p.m. – 1:15 p.m.

Total credits for spring semester: 11 credits