

Coursework requirements for graduate students that matriculated in Fall 2017

Students seeking a PhD degree in the Genetics and Genomics Area of Concentration (AOC) perform research in any of the Genetics and Genomics AOC laboratories and must complete AOC-specific requirements, in addition to the requirements set by the Graduate School.

1. Students must take a minimum of **four** courses taught by Genetics and Genomics faculty (Mellone, Core, Nelson, Malone, Zhang, R. O'Neill, and M. O'Neill). Courses offered each semester can be found [here](#). Additional coursework, as required by the Graduate School, can be completed outside the Genetics and Genomics program upon approval by the student's advisory committee. Please check the course credit requirements by the [Graduate School](#).
2. The qualifying exam for PhD candidates is administered according to the Genetic and Genomics AOC format, and includes a public seminar, a written thesis proposal, and an oral general exam.

Students seeking an MS degree in the Genetics and Genomics AOC are required to take a minimum of **four** courses taught by Genetics and Genomics faculty. Additional coursework, as required by the Graduate School, can be completed outside the Genetics and Genomics programs upon approval by the student's advisory committee. MS candidates wanting to complete a thesis are expected to perform research in a Genetics and Genomics laboratory.

Coursework requirements for graduate students matriculated prior to Fall 2017

The coursework requirements below are only those specific to the Genetics & Genomics Ph.D. and Masters Programs in MCB. NOTE: coursework requirements for the PSM program in Applied Genomics can be found on the [PSM website](#) under Applied Genomics/Requirements. All students are referred to the [Graduate School catalog](#) and to Departmental information for other requirements that may apply.

In addition to a foundation of knowledge in genetics and genomics (Category I), modern genetics research often requires integrative approaches that include organismal and evolutionary biology (Category II), and computational and quantitative biology (Category III). Ph.D. candidates and Masters by coursework students in Genetics and Genomics must complete a total of 6 courses from the following list of core courses with a grade of B or higher, and at least one course must come from each of the three categories. This is the basic course requirement for the program, and occurs within the total coursework credits required by the [Graduate School](#). Most students will take additional courses beyond the required 6 to complete total credit requirements by the Graduate School (44-48 total credits, including coursework and research credits for Ph.D. and 24 for Masters).

CATEGORY I. GENETICS AND GENOMICS

MCB 4416: Forensic Applications of DNA Science (3)

MCB 5426: Genetic Engineering & Functional Genomics (3)

MCB 5432: Molecular Genetic Approaches to Developing Systems (2 units)

MCB 5449: Molecular Genetics (3 units)

MCB 5452: Problems in the Genetics of Eukaryotes (3)

*MCB 5454: Molecular Aspects of Genetics (2)

MCB 5472: Computer Methods in Molecular Evolution (3)

MCB 5499: Genetics, Development and Evolution (2)
MCB 5621: Molecular Biology & Genetics of Prokaryotes (3)

CATEGORY II. EVOLUTIONARY AND ORGANISMAL BIOLOGY

*MCB 4219: Developmental Biol. (3)
MCB 5240: Virology (3)

CATEGORY III. COMPUTATIONAL AND QUANTITATIVE BIOLOGY

EEB 5348: Population Genetics (3)

ADDITIONAL ELECTIVES

GENETICS AND GENOMICS

MCB 5471: Molecular Evolution and Systematics (1)
MCB 5896: Investigation of Special Topics (max 6)

BIOINFORMATICS

MCB 5896 Investigation of Special Topics (max 6)
BME 6086 Special Topics In Biomedical Engineering (max 6)
CSE 5800/ BME 5800: Bioinformatics (3)
CSE 5095 Special Topics in Computer Science and Engineering (3)
STAT 6425: Seminar in Applied Probability (max 6)

* Recommended core courses for the program.