

M.S. in Computational Biology Program Curriculum

The typical semester-long course at CMU consists of 9-12 units. Full-time student status requires enrollment at least 36 units of coursework per semester. The minimum number of units required for the MSCB degree certification for students starting in fall 2021 is 144-153. These courses are in the Computational Biology Department (course codes beginning with 02-) and the Biological Sciences Department (course codes beginning with 03-). **Please note that the fall 2021 curriculum has not been finalized and is subject to change.**

Foundation courses (27-69 units) are taken in your first semester at CMU and provide you with fundamental skills in computation, molecular biology to help you succeed as a computational biologist. They are the following.

- 02-601: Programming for Scientists* (12 units, Fall)
- 02-602: Professional Issues for Computational Biology (3 units, Fall)
- 02-613: Algorithms and Advanced Data Structures (12 units, Fall)
- 02-680: Essential Math and Stats for Scientists* (9 units, Fall)
- 03-709: Applied Cell and Molecular Biology* (12 units, Fall)
- 02-620: Machine Learning for Scientists (12 units, Spring)
- 03-621: Quantitative Genetics* (9 units, Spring)

We acknowledge that, depending on your previous studies, you may be able to pass a placement exam to place out of one of the courses with an asterisk (*) beside it. If you place out of more than 9 units, you take additional units of depth courses (see below).

Breadth courses (36 units) give you a "broad" understanding of the key approaches used in computational biology. They consist of three 12-unit courses:

- 02-710 or 03-711: Genomics
- 03-712: Computational Methods for Biological Modeling and Simulation
- 02-750: Automation of Biological Research: Robotics and Machine Learning

Depth courses (48-81 units) give you the opportunity to dig "deeper" within a particular field of interest. A minimum of 24 units in advanced graduate coursework are taken from each of the Biological Sciences Department and Computational Biology Department. If you waive more than 9 units of foundation (classes with asterisks above), then you will need to complete a corresponding number of depth classes (e.g. if you pass out of 18 units of foundation, then you take 9 extra units of depth (from either department).

The official document describing your experience in the MSCB program is the MSCB handbook. You can find a copy of the handbook for current students at the following link:

[MSCB Program Student Handbook 2020-2021](#) (please note that this may be updated before your arrival to include any potential changes for the 2021-2022 academic year). The Carnegie Mellon University policies and procedures can be found [here](#).