Biology (PhD)

PhD students will be considered for one or more Institute-tracks depending on the research interests indicated on their application. Course requirements for individual students vary based on the recommendation of their committees and advisors, but in general, there are very few required courses.

During the first year, students take courses in their area of interest and participate in a laboratory rotation program. The rotations provide direct exposure to research activities in three laboratories and therefore invaluable in helping students select a laboratory in which to carry out dissertation research. After the first year in the program, students devote nearly all of their efforts to research. These activities culminate in the public defense of a dissertation.

More information about Biology PhD requirements can be found here: PhD Requirements | Biology | Natural Sciences (https://naturalsciences.uoregon.edu/biology/graduate-programs/phd-requirements/) and in the Graduate Student Handbook here (updated annually): Graduate Community | Biology | Natural Sciences (https://naturalsciences.uoregon.edu/biology/graduate-programs/community/)

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Achieve fluency in the scholarly literature, compelling questions, and research methods in the student's primary field of research.
- Acquire demonstrable and autonomous research skills, in field or laboratory, as befits specialty.
- Learn to process and present scientific data in compelling, credible formats.
- Gain experience and skills in pedagogy and teaching.
- Develop and execute an original research project that would be judged credible by peers and has or will result in one or more peer-reviewed publications appropriate to the field of study.

Doctor of Philosophy Degree in Biology

Requirements for Doctoral Students

A PhD in Biology from the University of Oregon begins with first-year research rotations, teaching assistantships, coursework, and exams. To help introduce students to different PIs, research, approaches, and biological subdisciplines, first year students participate in three, 10-week long lab rotations. The rotation process helps students gain a sound basis for choosing an area of research for their dissertation and aids them in finding the lab best suited to their interests, personalities, and capabilities.

In addition to rotations, first year students are required to serve three terms as a Graduate Employee (GE) Teaching Assistant (TA). Three terms of being a TA are required to Advance to Candidacy. PhD students also take courses, including Seminars and Journal Clubs each term. There are very few required courses (the exception is BI 610, Ethics in Life Science) although students must complete a minimum of 81 credits to graduate, which is easily achieved over the five-year average time-to-graduation. Institute and training programs may dictate further course requirements but typically there is abundant flexibility for students to choose courses that are of the greatest interest to them.

Following their first year students will identify a thesis lab and form their Dissertation Advisory Committee (DAC).

Outstanding students may be selected for specialized training as part of shared training programs:

- Molecular Biology and Biophysics Training Program (https://imb.uoregon.edu/graduate-program/molbio-training-program/)
- Genetics Training Program (https://imb.uoregon.edu/graduate-program/genetics-training-program/)
- Developmental Biology Training Program (https://devbio.uoregon.edu/)

During the first year, students take courses in their area of interest and participate in a laboratory rotation program. The rotations provide direct exposure to research activities in three laboratories and therefore invaluable in helping students select a laboratory in which to carry out dissertation research. After the first year in the program, students devote nearly all of their efforts to research. These activities culminate in the public defense of a dissertation.

Second year students conduct research, meet with members of their DAC, take courses, and complete a Proposal Exam. Once students have successfully passed their proposal exam, completed rotations and the teaching requirement (three terms each), and maintained a minimum GPA of 3.0, they may Advance to Candidacy. Thereafter, the primary focus for the student is on their dissertation research.

Code	Title	Credits
All Biology PhD Students		
BI 607	Seminar: [Topic] (Total Credits Vary) [1]	
BI 610	Experimental Course: [Topic] (Ethics in Life Science)	
BI 601	Research: [Topic] (Total Credits Vary)	
IMB Students		
BI 620	Molecular Genetics	
CH 662	Advanced Biochemistry	
BI 610	Experimental Course: [Topic] (Scientific Reasoning)	
INGP students in the Development Track [3]		
BI 620	Molecular Genetics	
INGP students in the Neurons, Circuits & Cognition Program		
BI 610	Experimental Course: [Topic] (Advanced Cellular Neuroscience)	
PSY 610	Experimental Course: [Topic] (Advanced Systems Neuroscience)	
PSY 610	Experimental Course: [Topic] (Advanced Cognitive Neuroscience)	
INGP students in the Theoretical Neuroscience Program - Sub-track A [4]		
BI 610	Experimental Course: [Topic] (Advanced Cellular Neuroscience)	
PSY 610	Experimental Course: [Topic] (Advanced System Neuroscience)	
BI 510	Experimental Course: [Topic] (Analysis of Neural Data)	
MATH 510	Experimental Course: [Topic] (Machine Learning and Statistics)	

CS 572	Machine Learning	
or CS 573	Probabilistic Methods for Artificial Intelligence	
or BIOE 610	Experimental Course: [Topic]	
or BI 510	Experimental Course: [Topic]	
INGP students in the Theoretical Neuroscience Program - Sub-track B [4]		
BI 610	Experimental Course: [Topic] (Advanced Cellular Neuroscience)	
PSY 610	Experimental Course: [Topic] (Advanced System Neuroscience)	
MATH 607	Seminar: [Topic] (Applied Math II: Statistical Learning)	
MATH 607	Seminar: [Topic] (Applied Math III: Neural Networks – Math607)	
CS 572	Machine Learning	
or CS 573	Probabilistic Methods for Artificial Intelligence	
or BIOE 610	Experimental Course: [Topic]	
or BI 510	Experimental Course: [Topic]	
Teaching Requirement Year 1		
Statistics Training [2]		
Quarterly Exams Year 1		
Proposal Exam Year 2		
Dissertation:		18
BI 603	Dissertation	
Total Credits:		**81**

[1] • All Biology PhD students are required to register for, and participate in, one Journal Club each term of each academic year. Students are required to make at least one journal club presentation each year, starting in Year 2. See the UO course catalog for current journal club offerings. Students who are off campus for research purposes or have conflicts with teaching assignments are exempt from this requirement. The exemption is given on a case-by-case basis.
• All Biology PhD students and OIMB MS students are expected to attend research seminars. Each research institute sponsors a series of research seminars that are typically given by prominent scientists from other institutions. Students are required to register for seminars in their research area each term that relevant seminars are offered. Students who are off campus for research purposes or have conflicts with teaching assignments are exempt from this requirement. Students who are working remotely away from their home campus are still required to attend seminars at the campus they are visiting, or via remote options, if available. In general, remote attendance (i.e., via Zoom) should be considered a temporary measure and in-person participation, where possible, is expected. The exemption is given on a case-by-case basis.

[2] All Biology PhD students on the Eugene campus must meet their institute's requirement for training in statistics as determined by the IAC, DAC, advisor, or institute requirements. INGP students in the Developmental track and the Neurons, Circuits & Cognition Program are required to take Bi600/DSCI600 Advanced Biological Statistics (Fall) or, with approval from the ION representative to the Graduate Affairs Committee, DSCI626 Foundational Statistics (Spring).

[3] INGP students in the Development Track are strongly encouraged to take Advanced Biochemistry - Ch662 in the Winter of the first year. Students in this track are further encouraged to take the other Advanced Development courses as they are offered.

[4] In some cases, students may also take different combinations of courses from the sub-tracks listed above with approval by the IAC or DAC.