Biology PhD

COLLEGE OF SCIENCE AND TECHNOLOGY

Learn more about the Doctor of Philosophy in Biology.

About the Program

The PhD in Biology offers students rigorous advanced study of the biological sciences. Broad preparation is offered in major research areas in Biology through a variety of formal courses and advanced seminars. Students are encouraged to take courses in related sciences. Preparation for both research and teaching is important.

Time Limit for Degree Completion: 7 years

Campus Location: Main

Full-Time/Part-Time Status: Full-time study is required.

Interdisciplinary Study: The program encourages interdisciplinary research and coursework in Biochemistry, Chemistry, Computer Science, Environmental Science, Engineering, Mathematics and Physics. Special interdisciplinary programs in which faculty from the Biology Department participate include the Center for Biotechnology, Center for Computational Genetics and Genomics, the Institute for Computational Molecular Science, the Institute for Genomics and Evolutionary Medicine (see http://igem.temple.edu/education/overview), and the Environmental Studies and Neuroscience Programs.

Areas of Specialization: Faculty members specialize in the areas of aquatic and terrestrial ecology, biochemistry, biophysics, cell biology, computational genomics, developmental biology, evolutionary and organismal biology, genetics, molecular biology, molecular evolution, neurobiology and virology.

Job Prospects: The department produces well-trained biologists who find work in the biotechnology, health professions and pharmaceutical fields, or in academia or government.

Non-Matriculated Student Policy: Non-matriculated students may enroll in a total of three courses (9 credits) with permission of the instructor and the department.

Financing Opportunities: Temple University offers a limited number of fellowships to support outstanding students in the doctoral program. Fellowships typically provide support, including a stipend and tuition, for two years.

Additional support is available in the form of Teaching and Research Assistantships. The principal duties of a Teaching Assistant include assisting faculty in the classroom; offering field and laboratory instruction; preparing materials for demonstration; conducting tutorials and laboratory sessions; and grading labs, quizzes and tests. Attendance at weekly laboratory preparation sessions is required. The duties of a Research Assistant vary depending on the faculty member or principal investigator who is directing a specific research project. The appropriate project(s) are determined by consultation between the student and the student's academic and research advisors. Research Assistants are expected to devote 20 hours per week to research obligations. Both Teaching and Research Assistantships typically provide a nine-month academic-year stipend and full tuition remission (up to 9 credits per term), but are generally awarded on a per term basis. Summer stipends are also available. Assistantships are awarded competitively.

Admission Requirements and Deadlines

Application Deadline:

Fall: December 15
Spring: October 15; August 1 international

To be considered for a University fellowship, applicants should have an essentially complete application on file by January 5.

Matriculation in the Fall is highly recommended. Late applications may be considered for admission.

APPLY ONLINE to this graduate program.

Letters of Reference:
Number Required: 3

From Whom: Letters should be obtained from college/university faculty, preferably those in laboratory science areas, who are familiar with the applicant's academic and/or research abilities.

Coursework Required for Admission Consideration: Applicants should have a solid background in Biology and should have taken at least eight undergraduate Biology courses and one year each of Calculus, Chemistry and Physics. The Biology Department Graduate Committee may allow exceptions to these course requirements after review.

Master's Degree in Discipline/Related Discipline: A master's degree is not required.

Bachelor's Degree in Discipline/Related Discipline: A baccalaureate degree in Biology or another science field is required.

Statement of Goals: In approximately 500 to 1,000 words, describe your interest in Temple's program, research goals, and academic and research achievements.

Standardized Test Scores:
GRE: Recommended, but not required. Submitting scores could be advantageous for applicants seeking to be awarded a university fellowship. Applicants are encouraged to contact prospective advisors or the chair of the graduate program for more information.

Applicants who earned their baccalaureate degree from an institution where the language of instruction was other than English, with the exception of those who subsequently earned a master's degree at a U.S. institution, must report scores for a standardized test of English that meet these minimums:

- TOEFL iBT: 90
- IELTS Academic: 6.5
- PTE Academic: 61
- Duolingo: 110

Resume: Current resume required.

Transfer Credit: Graduate credits from an accredited institution may be transferred into the Biology program. The credits must be equivalent to coursework offered by the Biology Department at Temple University. A grade of "B" or better must have been earned for the credits to transfer. The Biology Department Graduate Committee makes recommendations to the Department Chair for transferring credit on an individual basis. The maximum number of credits a student may transfer is 6.

Advanced Standing: A student who has completed a master's degree or started a PhD program at another institution may apply for advanced standing. Students are awarded varying numbers of credit of advanced standing, up to a maximum of 21, on a case-by-case basis. The credits must be equivalent to coursework offered at Temple, with a grade of "B" or better having been earned in the course(s).

Program Requirements

General Program Requirements:
Number of Credits Required Beyond the Baccalaureate: 36

Required Courses:

Code	Title	Credit Hours
Core Courses		
BIOL 8003	Introduction to Graduate Research	3
BIOL 8220	Seminar [1]	3
Three 8000-level Biology seminars [2]		9
Two additional graduate-level courses [3]		6
Electives		
Select three from the following:		9
BIOL 5101	Evolution	
BIOL 5111	Genomics in Medicine	
BIOL 5112	Fundamentals of Genomic Evolutionary Medicine	
BIOL 5114	Evolutionary Ecology	
BIOL 5128	Genomics and Infectious Disease Dynamics	
BIOL 5241	Genomics and Evolutionary Biology of Parasites and Other Dependent Species	
BIOL 5254	Animal Behavior	
BIOL 5275	Ecology of Invasive Species	
BIOL 5301	Cell Biology	
BIOL 5307	Conservation Biology	
BIOL 5312	Biostatistics	

BIOL 5321	Plant Community Ecology	
BIOL 5322	Biology of Plants	
BIOL 5323	Global Change Science: Analytics with R	
BIOL 5335	Polar Biology - Life at the Extremes	
BIOL 5337	Comparative Biomechanics	
BIOL 5338	Epigenetics	
BIOL 5358	Cellular/Molecular Neuroscience	
BIOL 5361	Molecular Neuropharmacology	
BIOL 5366	Stem Cell Biology	
BIOL 5403	Genomics	
BIOL 5416	Tropical Marine Biology: Belize	
BIOL 5428	Virology	
BIOL 5429	Developmental Genetics	
BIOL 5436	Freshwater Ecology	
BIOL 5452	Systems Neuroscience	
BIOL 5454	Neurological Basis of Animal Behavior	
BIOL 5456	Organization and Development of the Nervous System	
BIOL 5464	Biochemistry of Embryogenesis	
BIOL 5465	Mammalian Development	
BIOL 5466	Contemporary Biology	
BIOL 5469	Molecular Biology	
BIOL 5471	Cell Proliferation	
BIOL 5474	Physical Biochemistry	
BIOL 5475	General Biochemistry I	
BIOL 5476	General Biochemistry II	
BIOL 5479	Biotechnology	
BIOL 5501	Analytical Biotechnology	
BIOL 5502	Microbial Biotechnology	
EES 5011	Remote Sensing and GIS	
Research Courses [4]		**6**
BIOL 9994	Preliminary Examination Preparation	
BIOL 9998	Pre-Dissertation Research / Elevation to Candidacy	
BIOL 9999	Dissertation Research	
Total Credit Hours		**36**

1 Students take 1 credit of BIOL 8220 in the Fall and 2 credits of BIOL 8220 in the Spring.

2 One 3-credit seminar may be replaced with three 1-credit seminars.

3 Additional courses are selected from 8000-level seminars or from 5000-level Biology courses. With approval from the student's advisor and the Graduate Chair, two non-Biology graduate-level courses that align with the student's career goals may be taken.

4 A minimum of 2 credits of BIOL 9999 must be taken.

Additional Requirements:
All graduate-level courses must be passed with a "B-" or better.

All PhD candidates must have experience teaching at Temple University. A minimum teaching requirement of two terms may be satisfied by serving as a Teaching Assistant in the Biology Department.

Attendance at scheduled departmental colloquia is required.

Culminating Events:
Preliminary Examination:
The student independently prepares a written proposal and submits it to the Graduate Committee by April 1 of the student's fourth term. The proposal should follow the general format of a postdoctoral proposal to a federal granting agency (e.g., NIH). It should include background surrounding a particular research problem, including literature related to the problem and a detailed methodological plan for investigating the problem. The sections of the written proposal should include Title; Abstract (not to exceed 300 words); Specific Aims; Background and Significance; Preliminary Data;

Experimental Design (including Rationale, Specific Methods, Interpretation of Possible Results, and Pitfalls and Alternative Strategies); and References in PNAS format. The preliminary exam proposal should be 15 to 20 pages in length. The research advisor is not to make direct contributions to the brief.

The Area Committee has two weeks in which to review the written proposal, and the student is allowed only one re-write. If the proposal is not accepted after the first re-write, the student is considered to have failed the exam. If the written proposal is accepted, an oral examination is scheduled through the department and held within two weeks. The oral examination tests the student's understanding of the background and substance of the research proposal and understanding of the area of specialization in which the research is embedded.

The preliminary examination is administered by the Preliminary Examination Committee in the absence of the research advisor. A minimum of three examiners serve on the Preliminary Examination Committee. The full exam, both written and oral, is graded by the Preliminary Examination Committee, and one of the following grades is assigned: Fail, Promising, Pass, High Pass, or Pass with Distinction. The evaluators look for a breadth and depth of understanding of specific research areas; a critical application of that knowledge to specific biological phenomena; and an ability to write a proposal in a manner consistent with scientists in the student's specialization. The student is notified of the grade the day the exam is taken. A passing grade requires a 2/3 majority of the Preliminary Examination Committee. The grade of Promising denotes that an exam must be retaken. Examinations that are to be retaken must be completed before October 1 of the following academic year.

Dissertation:
The doctoral dissertation is an original empirical study that demonstrates the student's knowledge of research methods and mastery of their primary area of research.

The Doctoral Advisory Committee includes a minimum of four members: three from the department, including the advisor, and one from outside the department. Departmental members must be Graduate Faculty or equivalent research faculty and are chosen by the student and advisor. The Doctoral Advisory Committee is to be formed within two to three months after successful completion of the preliminary examination, with the exception of the outside member who may be chosen at a later date. The student may petition the Biology Department Graduate Committee to change an advisor or committee member if needed.

The Doctoral Defense is to consist of a formal departmental colloquium open to the public. It is conducted by the Doctoral Advisory Committee, with the outside examiner present. The Graduate School must be notified at least 10 working days in advance. Announcements of the dissertation defense are posted around the Biology Department and sent via e-mail or listserv.

The penultimate version of the dissertation must be approved by the Doctoral Advisory Committee at least two weeks before the Graduate School deadline for submission of final copies.

Contacts

Department Web Address:

https://www.temple.edu/academics/degree-programs/biology-phd-st-biol-phd

Department Information:

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Submission Address for Application Materials:

https://cst.temple.edu/academics/graduate-programs/apply-now

Department Contacts:

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