

# DOCTOR OF PHILOSOPHY IN THE FIELD OF BIOLOGICAL SCIENCES (STEM)

Our departmental graduate program is highly interactive in which students move easily among disciplines within the department and interact with other programs and institutions. Graduate research is generally in one of two areas 1) cell and molecular biology, and 2) systematics, evolution, and ecology. Students in the program often take advantage of other researchers, faculty, and facilities at GW and elsewhere in the Washington area. These include the National Institutes of Health (NIH) and the Smithsonian Institution's National Museum of Natural History.

A strong background in cell and molecular biology is essential for many competitive careers. Graduate students in this area conduct research on both well-studied model systems and non-model organisms, and often use comparative approaches. Common research themes among department faculty include cell signaling processes, and the genetic and cellular mechanisms governing virulence, behavior, immune responses, neurobiology, development, and the phenotypic expression of a variety of morphological traits. Students are trained in both experimental and comparative approaches and use a diverse array of modern research methods, ranging from precision imaging to gene editing to the assembly and analysis of genomes/proteomes/metabolomes.

Amid increasing concern about global change and biodiversity decline, expertise in systematics and ecology is more important than ever. GW's Systematics, Evolution, and Ecology (SEE) program is one of the few in the world specializing in the principles and methods of phylogenetic analysis and comparative biology, putting the university at the forefront of biodiversity studies. Departmental research in evolution and ecology spans a wide array of taxa and study systems, including both vertebrate (amphibians, reptiles, fishes) and invertebrate (social and non-social insects, arachnids, oysters) animals, plants, fungi, and bacteria. In addition to systematics, students can join labs conducting research on behavioral, ecosystem, community, and population ecology as well as ecomorphology and biomechanics.

To complement their classroom education, students can get involved in ongoing field research at both terrestrial and aquatic field sites around the world. Recent graduate students have studied termites and wood decomposition in Australian rainforests, collected ants in Brazilian savannas, discovered new reptiles and amphibians in Sri Lanka, and unearthed rare dinosaur fossils in the Gobi Desert of China.

The department regularly supports graduate student attendance at graduate short courses offered around the US and abroad, including those available through our membership in the Organization for Tropical Studies (OTS) as well as regularly offered short courses at Friday Harbor, Southwestern Research Station, and Woods Hole.

This is a STEM designated program.

Visit the program website (<https://biology.columbian.gwu.edu/phd-biology/>) for additional information.

## ADMISSIONS

Admission Fall - December 1 (Ph.D.); January 15 (M.S.)  
deadlines:

Standardized GRE general test recommended but not required  
test scores: (institutional code 5246).

The Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the PTE Academic is required of all applicants except those who hold a bachelor's, master's, or doctoral degree from a college or university in the United States or from an institution located in a country in which English is the official language, provided English was the language of instruction.

Minimum scores for the PhD and M.S. program are:

- Academic IELTS: an overall band score of 7.0 with no individual score below 6.0; or
- TOEFL: 600 on paper-based or 100 on Internet-based; or
- PTE Academic: 68

Recommendations: Three (3) recommendations required:

Prior academic records: Transcripts are required from all colleges and universities attended, whether or not credit was earned, the program was completed, or the credit appears as transfer credit on another transcript. Unofficial transcripts from all colleges and universities attended must be uploaded to your online application. Official transcripts are required only of applicants who are offered admission.

If transcripts are in a language other than English, English language translations must be provided. The English translation alone should be uploaded into your application.

Statement of purpose: In an essay of 250 – 500 words, state your purpose in undertaking graduate study in your chosen field. Include your academic objectives, research interests, and career plans. Also discuss your related qualifications, including collegiate, professional, and community activities, and any other substantial accomplishments not already mentioned on the application. If you are applying for an assistantship or fellowship, you should also describe any teaching experience you have had.

Applicants are required to establish correspondence with one or more potential research advisors in the Biological Sciences Department prior to submitting your application. You should mention these individuals in your statement of purpose, explain how your interests match their research program(s). Applicants who have not discussed with faculty their interests in the program are unlikely to be admitted.

International applicants only: Please follow this link - <https://columbian.gwu.edu/international-graduate-applicants> (<https://columbian.gwu.edu/international-graduate-applicants/>) - to review the International Applicant Information carefully for details on required documents, earlier deadlines for applicants requiring an I-20 or DS-2019 from GW, and English language requirements.

Supporting documents not submitted online should be mailed to:

Columbian College of Arts and Sciences, Office of Graduate Studies  
The George Washington University  
801 22nd Street NW, Phillips Hall 107  
Washington DC 20052

For additional information about the admissions process visit the Columbian College of Arts and Sciences Frequently Asked Questions (<https://columbian.gwu.edu/graduate-admissions-faq/>) page.

Contact:

[askccas@gwu.edu](mailto:askccas@gwu.edu)  
202-994-6210 (phone)

Hours: 9:00 am to 5:00 pm, Monday through Friday

## REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<https://bulletin.gwu.edu/arts-sciences/#regulationsgraduatetext>).

72 credits, including one-3-credit required course and 6 to 27 credits in thesis research. To advance to candidacy, successful completion of at least 45 credits of approved graduate-level coursework and completion of a general examination, comprising both written and oral examinations, are required. Students entering the program with a master's degree may be allowed to transfer up to 30 credits of graduate-level coursework into the program.

or BISC 6238	Foundations of Ecology
or BISC 6276	Foundations in Evolution
BISC 8999	Dissertation Research (taken for at least 6 but no more than 27 total credits)

Students can choose to focus on one of two research areas: Cellular and molecular biology, or systems, evolution, and ecology. Coursework is designed to prepare each student for a general examination in three specific fields of study relevant to their chosen research area. These fields of study are determined in consultation with an advisory committee appointed for the candidate.

Following the field examinations, students undertake dissertation research under the guidance of a dissertation director. The final examination is an oral defense of the dissertation.

Code	Title	Credits
<b>Required courses</b>		
BISC 6205	Foundations in Cell and Molecular Biology	