

BIOLOGICAL SCIENCES, PHD

The Department of Biological Sciences offers graduate programs in biology with areas of concentration in botany; microbiology; cellular and molecular biology; genetics; physiology and morphology of plants and animals; terrestrial and aquatic ecology; behavioral biology; conservation biology; and evolution.

Admission Requirements

Application Deadlines

Application deadlines vary by program, please review the application deadline chart (<http://uwm.edu/graduateschool/program-deadlines/>) for specific programs. Other important dates and deadlines can be found by using the One Stop calendars (<https://uwm.edu/onestop/dates-and-deadlines/>).

Admission

An applicant must meet Graduate School requirements (<https://uwm.edu/graduateschool/students/admission/>) plus the following program requirements to be considered for admission:

- Applicant must present at least 30 credits in one or more areas of biological sciences and must show substantial evidence of scholarly potential. A master's degree is not prerequisite for admission to the PhD program.
- Other academic preparation: a year of general physics including at least one semester of laboratory; one year of general college chemistry with laboratory, plus at least one semester of organic chemistry with laboratory or biochemistry with laboratory; two courses in college mathematics chosen from among courses in calculus, biometry or statistics.
- Submission of a reasons statement, outlining your academic and scientific background, reason for pursuing graduate studies, specific research area, why you decided to apply to the program and the names of faculty members with whom you would like to study (you can browse our research page to find a list of faculty and their research interests). Prior to listing them in your application, please contact the faculty members of interest via email to see if they are accepting new students.
- Submission of a resume/CV.
- Optional submission of scores on the General Test of the Graduate Record Examination (<http://uwm.edu/graduateschool/admission/#gre>).
- Acceptance by a faculty member in the program who will act as major professor (sponsor): see Major Professor as Advisor.
- Three letters of recommendation from persons familiar with the applicant's scholarship, research achievements and potential.
- International students must meet the minimum department requirements for English proficiency:
 - Completion of a baccalaureate or higher degree within the last two years from an institution where English is the sole language of instruction with a minimum of two years attendance; or
 - A minimum required TOEFL score of 79 overall with a minimum required score of 24 on the Speaking portion; or
 - A minimum required IELTS score of 6.5 overall with a minimum required score of 7.0 on the Speaking portion; or
 - A minimum required CAE score of C1 overall with a minimum required score of 185 on the Speaking portion; or
- A minimum required Duolingo score of 120 overall with a minimum required score of 125 on the Conversation and Production sections.

Applicants may be admitted with specific course deficiencies provided that the deficiencies amount to no more than two courses. The student is expected to satisfy deficiency requirements with a grade of C or better within three enrolled semesters. The deficiencies are monitored by the Graduate School and the individual graduate program unit. No course credits earned in making up deficiencies may be counted as program credits required for the degree. The student is expected to maintain a grade of B in all other coursework.

Reapplication

A student in the MS program, or who receives the master's degree at UWM, must formally reapply for admission to the Graduate School before continuing studies toward the PhD.

Credits and Courses

Minimum degree requirement is 54 credits beyond the bachelor's degree, at least 27 of which must be earned in residence at UWM.

Code	Title	Credits
	Select at least 27 credits in formal coursework and seminars	27
	Select 4 colloquium credits	4
	Select 23 credits in independent reading and/or study, or research	23
Total Credits		54

At least 30 of the 54 credits must be in biological sciences; 12 credits may be earned in allied sciences, including those in the secondary area of concentration or minor field(s).

Additional Requirements

Major Professor as Advisor

The student must have a major professor to advise and supervise the student's studies as specified in Graduate School regulations. The graduate committee assigns the incoming biological sciences student to an advisor whose experience and research most closely approximates the student's own career interests. Before the student's preliminary examination either this initially assigned advisor or another qualified staff member is designated as the student's major professor.

Secondary Area of Concentration

The student must select a secondary area of concentration either within biological sciences or in an allied science, and must present at least 9 credits of coursework in that area to the departmental Graduate Committee. A university minor (option A or B) may qualify as a secondary area of concentration upon approval by the departmental Graduate Committee.

Language or Data Analysis Proficiency

The student must demonstrate proficiency either in a foreign language or data analysis. The student can demonstrate language proficiency in one language other than English (German, French, Russian or Spanish preferred), either through examinations or through 12 credits of specified coursework, either before or after admission to the program. The student can demonstrate proficiency in data analysis by presenting 12 credits in one or more of the following: mathematics (200-level or above), statistics, computer science.

Residence

The student must meet Graduate School residence requirements (<https://uwm.edu/graduateschool/students/academic-policies-and-procedures/doctoral-resources/doctoral-requirements/>).

PhD Advisory Committee

The PhD Advisory Committee shall be selected by the major professor in consultation with the student by the end of the first year of enrollment.

The PhD Advisory Committee shall consist of the major professor and four other graduate faculty members. One of the faculty should reflect competency in the secondary area of concentration. When the advisory committee is formed, the student must prepare a departmental "certification document" for the approval of the committee. The committee must meet at least once a year to monitor and formally report on the student's academic and research progress.

Dissertation Proposal and Doctoral Preliminary Examination

Prior to the doctoral preliminary examination, the student submits a preliminary written dissertation proposal to the student's PhD Advisory Committee and delivers an oral presentation of relevant research in progress. The doctoral preliminary examination is in two parts. Part I is a written exam; Part II is an oral exam. Parts I and II of the doctoral preliminary examination must be taken with a warrant from the Graduate School; and must be taken before the end of the second or third year of full-time enrollment (before completion of 24 or 36 credits for students with a MS or BS degree, respectively). Deviation from this plan must be approved by the Graduate Committee.

Dissertator Status

Specific requirements which must be completed before the Graduate School places a doctoral student in dissertator status are described in the Doctor of Philosophy Degree requirements (<https://uwm.edu/graduateschool/students/academic-policies-and-procedures/doctoral-resources/doctoral-requirements/>) section.

Dissertation

In consultation with the major professor the candidate must select a suitable research project and submit a written research plan. The final dissertation proposal constitutes the student's written research plan which is subject to approval of the PhD Advisory Committee. This plan is to be submitted to the Department. The research plan will be reviewed for progress annually. During the final year of study the candidate must present a seminar, with prior public announcement, on this research and must prepare a dissertation reporting the results of this research. The original research findings embodied in this dissertation should be acceptable for publication in a refereed journal.

Dissertation Defense

As the final step toward the degree the candidate must defend the dissertation before the PhD Advisory Committee.

Time Limit

All degree requirements must be completed within ten years from the date of initial enrollment in the doctoral program. For additional information on Graduate School PhD requirements, see the Doctor of Philosophy Degree requirements (<https://uwm.edu/graduateschool/students/academic-policies-and-procedures/doctoral-resources/doctoral-requirements/>) section.

Biological Sciences PhD Learning Outcomes

Students graduating from the Biological Sciences PhD Program will be able to:

- **Summarize, synthesize, and critique** the relevant literature, theories, and methodologies for the student's specific research topic.
- **Identify** unanswered questions, **generate** hypotheses and **design experiments** to address those questions.
- Develop a **command** of the broader literature in relation to the student's specific research topic.
- **Design and conduct** original research that is publishable in peer-reviewed journals that constitutes the student's thesis to be defended.
- Effectively **communicate** research findings in **oral** and **written** forms; e.g., in presentations at national research conferences.
- PhD students are **required** to have submitted or published at least one primary authored manuscript in a peer reviewed journal prior to graduation.
- PhD students are **encouraged** to participate in additional projects to broaden their knowledge, gain new techniques, and learn how to collaborate with their colleagues.