

# FRESHWATER AND MARINE SCIENCES, PHD

The Freshwater and Marine Sciences (FMS) Graduate Program offers curricula leading to the master of science and doctor of philosophy degrees in freshwater and marine sciences. Interdisciplinary in nature, each individualized program of study provides graduate training in aquatic sciences and integrates related sciences. Students enrolled in the program are advised by faculty in several departments in the College of Letters & Science, the College of Engineering, the College of Agricultural and Life Sciences, and the School of Veterinary Medicine.

UW–Madison is recognized worldwide as a leader in the field of limnology and aquatic ecology. The FMS Program began in 1962 as the oceanography and limnology program. The program combines research and teaching from several fields and departments to develop a greater understanding of aquatic systems—their origins, inhabitants, phenomena, and impact on human life.

The FMS Program emphasizes limnological studies and is based on the premise that limnology and marine sciences are integrated fields requiring a broad base in the fundamental disciplines. Students may specialize in limnology or in marine sciences, or they may focus on processes common to both environments.

Study plans are individually tailored for each student by a guidance and evaluation committee composed of at least five faculty members including the major professor. The committee guides the student in developing study plans, research, and career goals.

All PhD candidates are expected to obtain a broad background in aquatic sciences and depth in their research area. The background may include biology, chemistry, data science, geology, physics, or other related fields. The major, by nature of the program, includes advanced courses in several subdisciplines in freshwater and marine sciences.

## FACILITIES

Facilities for freshwater and marine research and instruction in the biological, chemical, and physical areas of limnology and marine sciences are available at UW–Madison through the Center for Limnology, the Water Science & Engineering Laboratory, and the departments of faculty participating in the program. The Center for Limnology also maintains a year-round laboratory at Trout Lake. This facility is a well-equipped biological field station in the Northern Highlands lake district of Wisconsin. Several research vessels are available for research on the Great Lakes. Ships belonging to other institutions are used for oceanographic field research.

## ADMISSIONS

### ADMISSIONS

Please consult the table below for key information about this degree program's admissions requirements. The program may have more detailed admissions requirements, which can be found below the table or on the program's website.

Graduate admissions is a two-step process between academic programs and the Graduate School. **Applicants must meet the minimum requirements (<https://grad.wisc.edu/apply/requirements/>) of the Graduate School as well as the program(s).** Once you have researched the graduate program(s) you are interested in, apply online (<https://grad.wisc.edu/apply/>).

Requirements	Detail
Fall Deadline	January 1
Spring Deadline	October 1
Summer Deadline	March 17 for international applicants; May 1 for domestic applicants
GRE (Graduate Record Examinations)	Not required.
English Proficiency Test	Refer to the Graduate School: Minimum Requirements for Admission policy: <a href="https://policy.wisc.edu/library/UW-1241">https://policy.wisc.edu/library/UW-1241</a> ( <a href="https://policy.wisc.edu/library/UW-1241/">https://policy.wisc.edu/library/UW-1241/</a> ).
Other Test(s) (e.g., GMAT, MCAT)	n/a
Letters of Recommendation Required	3

## ADMISSIONS

Given the broad nature of the program, there are no strict prerequisites for admission. Interested applicants should identify and contact potential faculty advisors. Admission to the graduate program is contingent upon being accepted by an individual faculty advisor. Applicants should contact potential faculty advisors by email early in the application process to discuss mutual interests and to determine if the faculty member is actively recruiting graduate students. For a list of all faculty members and their research interests, please see Faculty (<https://fms.wisc.edu/faculty-staff/>) on the program website.

In addition to the Graduate School application, all applicants must electronically submit at least three letters of recommendation, the supplemental application questions, a personal statement including areas of research interest and the names of prospective faculty advisors, a CV/resume, and unofficial transcripts from all undergraduate and graduate schools attended (official transcripts will be requested if recommended for admission to the program). Most admission decisions will be made, and applicants will be notified, by the end of March.

## FUNDING

### FUNDING GRADUATE SCHOOL RESOURCES

The Bursar's Office provides information about tuition and fees associated with being a graduate student. Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid. Further funding information is available from the Graduate School. Be sure to check with your program for individual policies and restrictions related to funding.

### PROGRAM RESOURCES

Various types of financial assistance programs are available to qualified students in the form of research assistantships, teaching assistantships,

fellowships, and special grants. Decisions regarding financial support are based on letters of recommendation, grades, and the matching of interests or experience of the applicant to the research program. For research assistantships, the applicant's interests and experience must match the needs of the funding project.

## REQUIREMENTS

### MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum degree requirements (<https://guide.wisc.edu/graduate/#requirements>) and policies (<https://guide.wisc.edu/graduate/#policies>), in addition to the program requirements listed below.

### MAJOR REQUIREMENTS

#### MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	No

#### Mode of Instruction Definitions

**Accelerated:** Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

**Evening/Weekend:** Courses meet on the UW-Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

**Face-to-Face:** Courses typically meet during weekdays on the UW-Madison Campus.

**Hybrid:** These programs combine face-to-face and online learning formats. Contact the program for more specific information.

**Online:** These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

### CURRICULAR REQUIREMENTS

Requirement Detail	
Minimum Credit Requirement	51 credits
Minimum Residence Credit Requirement	32 credits
Minimum Graduate Coursework Requirement	26 credits must be graduate-level coursework. Refer to the Graduate School: Minimum Graduate Coursework (50%) Requirement policy: <a href="https://policy.wisc.edu/library/UW-1244">https://policy.wisc.edu/library/UW-1244</a> ( <a href="https://policy.wisc.edu/library/UW-1244/">https://policy.wisc.edu/library/UW-1244/</a> ).
Overall Graduate GPA Requirement	3.00 GPA required. Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: <a href="https://policy.wisc.edu/library/UW-1203">https://policy.wisc.edu/library/UW-1203</a> ( <a href="https://policy.wisc.edu/library/UW-1203/">https://policy.wisc.edu/library/UW-1203/</a> ).

**Other Grade Requirements** Students must earn a B or above in all courses applied to degree requirements.

**Assessments and Examinations** Doctoral students are required to take a comprehensive preliminary exam by the end of their fifth semester of study in the PhD program. A final oral exam of the doctoral dissertation is required. Deposit of the doctoral dissertation in the Graduate School is required.

**Language Requirements** No language requirements.

**Graduate School Breadth Requirement** All doctoral students are required to complete a doctoral minor or graduate/professional certificate. Refer to the Graduate School: Breadth Requirement in Doctoral Training policy: <https://policy.wisc.edu/library/UW-1200> (<https://policy.wisc.edu/library/UW-1200/>).

### REQUIRED COURSES

PhD students in the Freshwater and Marine Sciences (FMS) program must complete courses and seminars to satisfy the minimum credit requirement for the degree. The FMS program does not require specific classes, but instead courses are approved by the student's advisor or advisory committee and depend on the student's research area, interests, and professional goals (below are a list common graduate level courses).

Code	Title	Credits
<b>Breadth</b>		<b>9</b>
<b>Graduate Seminars</b>		
Common coursework examples include:		3-4
ZOOLOGY/ ATM OCN/ BOTANY/ CIV ENGR/ ENVIR ST/ GEOSCI 911	Limnology and Marine Science Seminar	
ZOOLOGY 955	Seminar-Limnology	
<b>Research Credits</b>		
Common coursework examples include:		9-12
ATM OCN 990	Research	
BOTANY 995	Research-Plant Ecology	
CIV ENGR 890	Pre-Dissertator's Research	
CIV ENGR 990	Thesis	
ENVIR ST 990	Research	
F&W ECOL 990	Research and Thesis	
GEOSCI 990	Research	
MICROBIO 990	Research	
PATH-BIO 990	Research	
PLANTSCI 990	Research	
SOIL SCI 990	Research	
ZOOLOGY 990	Research	
<b>Graduate Level Coursework</b>		
At least 50% of credits must be in courses designated as graduate level coursework ("Grad 50%" attribute). Common coursework examples include:		26
CIV ENGR 415	Hydrology	
CIV ENGR 500	Water Chemistry	
F&W ECOL/ STAT 571	Statistical Methods for Bioscience I	

F&W ECOL/ ZOOLOGY 660	Climate Change Ecology	
F&W ECOL/ ENTOM 711	Multivariate Analysis of Ecological and Community Data	
ZOOLOGY/ ENTOM 540	Theoretical Ecology	
ZOOLOGY/ BOTANY 725	Ecosystem Concepts	
<b>Total Credits</b>		<b>51</b>

## POLICIES

### GRADUATE SCHOOL POLICIES

The Graduate School's Academic Policies and Procedures (<https://grad.wisc.edu/acadpolicy/>) serve as the official document of record for Graduate School academic and administrative policies and procedures and are updated continuously. Note some policies redirect to entries in the official UW-Madison Policy Library (<https://policy.wisc.edu/>). Programs may set more stringent policies than the Graduate School. Policies set by the academic degree program can be found below.

### MAJOR-SPECIFIC POLICIES PRIOR COURSEWORK

#### Graduate Credits Earned at Other Institutions

With program approval, students may be allowed to transfer up to 19 credits of graduate coursework from other institutions. Coursework earned ten years or more prior to admission to a doctoral degree is not allowed to satisfy requirements.

#### Undergraduate Credits Earned at Other Institutions or UW-Madison

No undergraduate coursework is allowed to transfer.

#### Credits Earned as a Professional Student at UW-Madison (Law, Medicine, Pharmacy, and Veterinary careers)

Refer to the Graduate School: Transfer Credits for Prior Coursework (<https://policy.wisc.edu/library/UW-1216/>) policy.

#### Credits Earned as a University Special Student at UW-Madison

With program approval, students may be allowed to transfer up to 15 credits taken as a UW-Madison University Special student. Coursework earned ten years or more prior to admission to a doctoral degree is not allowed to satisfy requirements.

### PROBATION

A semester GPA below 3.000 will result in the student being placed on academic probation. If a semester GPA of 3.000 is not attained during the subsequent semester of enrollment the student may be dismissed from the program or allowed to continue for one additional semester based on advisor appeal to the Graduate School.

### ADVISOR / COMMITTEE

All incoming students are assigned an advisor. Students are expected to meet with their advisor on a regular basis.

### CREDITS PER TERM ALLOWED

15 credit maximum. Refer to the Graduate School: Maximum Credit Loads and Overload Requests (<https://policy.wisc.edu/library/UW-1228/>) policy.

### TIME LIMITS

A candidate for a doctoral degree who fails to take the final oral examination and deposit the dissertation within five years after passing the preliminary examination may be required to take another preliminary examination and to be admitted to candidacy a second time.

### GRIEVANCES AND APPEALS

These resources may be helpful in addressing your concerns:

- Bias or Hate Reporting (<https://doso.students.wisc.edu/bias-or-hate-reporting/>)
- Graduate Assistantship Policies and Procedures (<https://hr.wisc.edu/policies/gapp/#grievance-procedure>)
- Hostile and Intimidating Behavior Policies and Procedures (<https://hr.wisc.edu/hib/>)
  - Office of the Provost for Faculty and Staff Affairs (<https://facstaff.provost.wisc.edu/>)
- Employee Assistance (<http://www.eao.wisc.edu/>) (for personal counseling and workplace consultation around communication and conflict involving graduate assistants and other employees, post-doctoral students, faculty and staff)
- Employee Disability Resource Office (<https://employee disabilities.wisc.edu/>) (for qualified employees or applicants with disabilities to have equal employment opportunities)
- Graduate School (<https://grad.wisc.edu/>) (for informal advice at any level of review and for official appeals of program/departmental or school/college grievance decisions)
- Office of Compliance (<https://compliance.wisc.edu/>) (for class harassment and discrimination, including sexual harassment and sexual violence)
- Office Student Assistance and Support (OSAS) (<https://osas.wisc.edu/>) (for all students to seek grievance assistance and support)
- Office of Student Conduct and Community Standards (<https://conduct.students.wisc.edu/>) (for conflicts involving students)
- Ombuds Office for Faculty and Staff (<http://www.ombuds.wisc.edu/>) (for employed graduate students and post-docs, as well as faculty and staff)
- Title IX (<https://compliance.wisc.edu/titleix/>) (for concerns about discrimination)

### L&S POLICY FOR GRADUATE STUDENT ACADEMIC APPEALS

Graduate students have the right to appeal an academic decision related to an L&S graduate program if the student believes that the decision is inconsistent with published policy.

Academic decisions that may be appealed include:

- Dismissal from the graduate program
- Failure to pass a qualifying or preliminary examination
- Failure to achieve satisfactory academic progress
- Academic disciplinary action related to failure to meet professional conduct standards

Issues such as the following cannot be appealed using this process:

- A faculty member declining to serve as a graduate student's advisor.
- Decisions regarding the student's disciplinary knowledge, evaluation of the quality of work, or similar judgements. These are the domain of the department faculty.
- Course grades. These can be appealed instead using the L&S Policy for Grade Appeal (<https://kb.wisc.edu/lis/22258/>).
- Incidents of bias or hate, hostile and intimidating behavior (<https://hr.wisc.edu/hib/>), or discrimination (Title IX (<https://compliance.wisc.edu/titleix/>), Office of Compliance (<https://compliance.wisc.edu/eo-complaint/formal-investigations/>)). Direct these to the linked campus offices appropriate for the incident(s).

### Appeal Process for Graduate Students

A graduate student wishing to appeal an academic decision must follow the process in the order listed below. Note time limits within each step.

1. The student should first seek informal resolution, if possible, by discussing the concern with their academic advisor, the department's Director of Graduate Studies, and/or the department chair.
2. If the program has an appeal policy listed in their graduate program handbook, the student should follow the policy as written, including adhering to any indicated deadlines. In the absence of a specific departmental process, the chair or designee will be the reviewer and decision maker, and the student should submit a written appeal to the chair within 15 business days of the academic decision. The chair or designee will notify the student in writing of their decision.
3. If the departmental process upholds the original decision, the graduate student may next initiate an appeal to L&S. To do so, the student must submit a written appeal to the L&S Assistant Dean for Graduate Student Academic Affairs within 15 business days of notification of the department's decision.
  - a. To the fullest extent possible, the written appeal should include, in a single document: a clear and concise statement of the academic decision being appealed, any relevant background on what led to the decision, the specific policies involved, the relief sought, any relevant documentation related to the departmental appeal, and the names and titles of any individuals contributing to or involved in the decision.
  - b. The Assistant Dean will work with the Academic Associate Dean of the appropriate division to consider the appeal. They may seek additional information and/or meetings related to the case.
  - c. The Assistant Dean and Academic Associate Dean will provide a written decision within 20 business days.
4. If L&S upholds the original decision, the graduate student may appeal to the Graduate School. More information can be found on their website: Grievances and Appeals (<https://grad.wisc.edu/documents/grievances-and-appeals/>) (see: Graduate School Appeal Process).

### OTHER

Graduate students in the Freshwater and Marine Sciences program are typically supported through research assistantships, teaching assistantships, fellowships, and special grants. Students are encouraged to seek outside funding and should talk with prospective faculty members regarding funding options.

## PROFESSIONAL DEVELOPMENT

### PROFESSIONAL DEVELOPMENT GRADUATE SCHOOL RESOURCES

Take advantage of the Graduate School's professional development resources (<https://grad.wisc.edu/pd/>) to build skills, thrive academically, and launch your career.

## LEARNING OUTCOMES

### LEARNING OUTCOMES

1. Articulate challenges, frontiers, and limits with respect to theory, knowledge or practice within relevant areas of freshwater and marine sciences.
2. Formulate ideas, concepts, designs, and/or techniques beyond the current boundaries of knowledge within the students' relevant research field(s).
3. Conduct research that makes a substantive contribution.
4. Demonstrate breadth within freshwater and marine sciences.
5. Communicate complex or ambiguous ideas in a clear and understandable manner.
6. Consider the implications of the discipline to broader societal concerns.
7. Foster ethical conduct and professional guidelines.