Graduate Student Handbook 2014-15

Master of Science in Freshwater Sciences and Technology
Welcome to the School of Freshwater Sciences

The information in the School of Freshwater Sciences graduate student handbook applies to all students admitted for study at the School of Freshwater Sciences and supplements information provided in the online Graduate School Catalog (http://www.graduateschool.uwm.edu/).

During your time in our program, you should consult the Graduate School about deadlines and requirements for graduation, as well as information regarding transfer of credits, tuition, fees, residency requirements, thesis credit requirements, and taxes on assistantships.
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SFS MS Handbook 2014-15
General Information

The UWM School of Freshwater Sciences (SFS) is located in Milwaukee, Wisconsin at the edge of the largest freshwater system on the surface of the Earth -- the Great Lakes. Established in 2009, SFS expands a tradition of freshwater studies at UWM that began in 1966 with the Center for Great Lakes Studies and continued with the Great Lakes WATER Institute in 1973.

SFS is the first graduate school in the nation dedicated solely to the study of freshwater. We are committed to equipping future scientists/professionals with the skills and expertise to address the complex, multifaceted issues facing the world’s freshwater resources. Our research and education programs are integrated across four major areas: freshwater system dynamics; human & ecosystem health; freshwater technology; freshwater economics, policy, and management.

Program of Study

Degree Options
The School of Freshwater Sciences offers both MS and PhD programs that prepare students for careers in the water sciences utilizing novel approaches to the sustainable and equitable use and management of freshwater systems worldwide.

At the Master’s level, the School of Freshwater Sciences has two tracks designed to provide a strong foundation for the training of graduates that will the School offers two options:

- **MS Thesis track** (thesis requirement), for students interested in pursuing research positions or a doctoral degree; or
- **MS Professional Science track** (internship requirement), incorporating interdisciplinary science and business courses for students who wish to apply their skills in management, industry, or business settings.
Administrative Contacts

School of Freshwater Sciences
600 E. Greenfield Ave.
Milwaukee, WI 53204
(414) 382-1700

Dr. Timothy Grundl
Graduate Program Representative
(414) 382-1744
grundl@uwm.edu

Dr. Paul Roebber
Associate Dean of Academic & Administrative Affairs (on Sabbatical Fall 2014)
(414) 382-1751
roebber@uwm.edu

Dr. Harvey Bootsma
Interim Associate Dean of Academic & Administrative Affairs (Fall 2014)
(414) 382-1717
hbootsma@uwm.edu

Margret Petrie
Academic Program Manager
(414) 382-1704
petriem@uwm.edu

Lindsay Frost
Career Development Manager
lgfrost@uwm.edu

For a complete list of SFS Administrative Staff, visit:
http://home.freshwater.uwm.edu/freshwater/people/#admin

Graduate School
Graduate Student Services is located at
3203 N Downer Ave.,
261 Mitchell Hall
Milwaukee, WI 53211.

Academic Programs & Student Services
Phone: (414) 229-6569
Fax: (414) 229-6967

Molly Wierzbicki
Program Service Representative
(414) 229-4374
E-mail: mkwierz@uwm.edu

Jenna Jazna
Master’s Graduation Specialist
(414) 229-4234
jazna@uwm.edu
SFS Faculty and Scientists

Graduate Faculty

Professors
Garman, David, PhD, University of Sydney
Grundl, Timothy, PhD, Colorado School of Mines
Guo, Laodong, PhD, Texas A&M University
Janssen, John, PhD, Michigan State University
Klump, J. Val, PhD, University of North Carolina
Roebber, Paul, PhD, McGill University

Associate Professors
Bootsma, Harvey, PhD, University of Manitoba
Carvan, Michael, PhD, Texas A&M University
Kaster, Jerry, PhD, University of Colorado
Kehl, Jenny, PhD, University of Colorado-Boulder
Klaper, Rebecca, PhD, University of Georgia
McLellan, Sandra, PhD, University of Cincinnati

Assistant Professors
Berardo, Ramiro, PhD, Florida State University
Consi, Thomas, PhD, Columbia University
Grant, Laura, PhD, University of California-Santa Barbara
Lazkano, Itziar, PhD, University of Calgary, Canada
Sepulveda Villet, Osvaldo Jhonatan, PhD, University of Toledo
Smith, Matthew, PhD, University of Tasmania
Waples, James, PhD, University of Wisconsin-Milwaukee

Scientists
Aguilar-Diaz, Carmen, PhD, University of Wisconsin-Milwaukee
Cuhel, Russell, PhD, Massachusetts Institute of Technology & Woods Hole Oceanographic Institution
**UWM Affiliate Faculty**

**Distinguished Professor**
Strickler, Rudi, PhD, Swiss Federal Institute of Technology (Biological Sciences)

**Professor**
Hutz, Reinhold, PhD, Michigan State University (Biological Sciences)

**Associate Professors**
Berges, John, PhD, University of British Columbia (Biological Sciences)
Udvadia, Ava J., PhD, Duke University (Biological Sciences)
Young, Erica, PhD, Monash University (Biological Sciences)

**Assistant Professors**
Chang, Woo-Jin, PhD, Inha University (Mechanical Engineering)
Han, Weon Shik, PhD, New Mexico Institute of Mining and Technology (Geosciences)
Xu, Shangping, PhD, Princeton University (Geosciences)

Additional information about our programs and faculty can be found at our website:
http://www4.uwm.edu/freshwater/

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**Financial Support**

Students admitted to the School of Freshwater Sciences may be eligible for financial support through Graduate School Fellowships, Research Assistantships, or scholarships. Students seeking financial support should so indicate on their Graduate School application forms. Research Assistantship appointments and scholarships are available through the School of Freshwater Sciences.

**Graduate School Fellowships**
A limited number of competitively awarded fellowships are available to full time graduate students through the Graduate School. The Distinguished Graduate Student Fellowship, Graduate School Dissertation Fellowship, and Advanced Opportunity Fellowship include full remission of tuition, a monthly stipend and benefits such as health insurance. Application materials for are available online in the Graduate School.

**Research Assistantships**
A Research Assistantship (RA), available for MS thesis track and PhD students, provides support for specific research projects through external grants and projects awarded to individual faculty.

**Scholarships**
Current scholarship opportunities offered directly through the School of Freshwater Sciences can be found at: http://www4.uwm.edu/freshwater/academics/aid_and_support.cfm
The Master of Science Degree in Freshwater Sciences and Technology
Thesis Track

The Master of Science thesis track is an interdisciplinary research-based program for students interested in pursuing research positions or doctoral degrees. This track provides the opportunity for students to conduct a directed research project leading to the writing and defense of a master's thesis. Applicants must be informally accepted by a faculty member who will serve as the Major Professor and Advisor. Acceptance by a faculty member does not constitute formal acceptance into the School of Freshwater Sciences. This track requires a thesis defense for graduation.

Credits and Courses
Minimum degree requirement is 30 graduate credits.

Required core courses (9 credits)
- FRSHWTR 502 Aquatic Ecosystem Dynamics (3 credits)
- FRSHWTR 504 Freshwater Analysis (3 credits)
One of the following:
  - FRSHWTR 506 Environmental Health of Freshwater Ecosystems (3 credits)
  - FRSHWTR 508 Freshwater Engineering (3 credits)
  - FRSHWTR 510 Economics, Policy & Management of Water (3 credits)

Elective courses (9-12 credits)
To be selected in consultation with the student's major professor.

Seminars and Practica (6 credits)
- Two FRSHWTR 901 Seminar in Freshwater Sciences (1-2 credits each)
- Two FRSHWTR 512 Freshwater Sciences Practicum (2 credits each)

Thesis research (up to 6 credits)

General Timeline for Completion of MS Thesis Track

<table>
<thead>
<tr>
<th></th>
<th>Fall semester</th>
<th>Spring Semester</th>
<th>Summer</th>
</tr>
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<tbody>
<tr>
<td>Year 1</td>
<td>Establish plan of study; Form Thesis Advisory Committee; Begin core course requirements; Complete 9 course credits.</td>
<td>Complete core requirements; Complete 9 course credits; Begin research; Submit research proposal.</td>
<td>Research</td>
</tr>
<tr>
<td>Year 2</td>
<td>Proposal defense/preliminary oral exam; Complete 3 course credits; Complete 3 research credits.</td>
<td>Complete 3 course credits; Complete 3 research credits; Thesis defense.</td>
<td></td>
</tr>
</tbody>
</table>
Grade Requirements
An average GPA of 3.0 (4.0 basis) or better is required in all work taken as a graduate student. Students receiving a grade of less than a “B” in coursework or an overall GPA < 3.0 will receive an academic warning from the Graduate Dean. Grades of “D” or “F” are unsatisfactory and do not count in meeting degree requirements. Poor performance will result in the student’s dismissal from the program.

Major Professor as Advisor
Students in the thesis track must be accepted by a faculty member who will serve as the initial major professor, and be primarily responsible for matriculation. Acceptance or agreement by a faculty member does not constitute formal acceptance into the School of Freshwater Sciences. Prospective thesis-track students are strongly encouraged to communicate with the prospective major professors early in the admission process.

Plan of Study
A plan of study is required that identifies the planned courses and a timeline for completion of the degree. For students enrolled in the thesis track, this includes coursework and proposed research to be planned in consultation with the major professor and must be approved by the Thesis Advisory Committee.

Thesis Advisory Committee
The membership of the Thesis Advisory Committee should be established by the end of the student's first semester. The Committee must consist of three members including the student’s advisor as chair (or co-advisors as co-chairs who are graduate faculty members from the School of Freshwater Sciences) and at least two additional members, one of whom must come from outside the student’s research focus.

Consideration will be given to the inclusion of one external, non-UWM member of the committee. If included as part of the committee, this person would participate in the thesis defense examination. The Committee must meet at least once a year to monitor the student’s academic and research progress.

Thesis Requirements

Proposal Defense and Preliminary Oral Examination
The student must complete a formal oral defense of her or his written thesis proposal. This defense should be made early during the second year (before the end of the third semester) and will serve as the preliminary oral examination. The Thesis Committee decides by simple majority whether the student passes, fails, or must repeat the examination or defense. At the discretion of the Committee, a student who fails the defense or examination may be allowed one additional attempt at successful completion.
Thesis
The thesis is conducted with oversight from the student's Advisory Committee. The thesis research is expected to be of a caliber sufficient for publication in a peer-reviewed journal. Satisfactory completion of the thesis, including successful defense, is required for graduation. Up to six credits may be awarded for thesis research.

Please see the Graduate School thesis and dissertation formatting requirements: http://www.graduateschool.uwm.edu/students/current/thesis-and-dissertation-formatting/

Thesis defense
You must pass an oral examination in which you defend your thesis. The thesis defense is a public presentation of the thesis research followed by an oral defense administered by the Advisory Committee.

Applying for Graduation

Candidate for Master’s Degree
A Master’s Graduation Application must be submitted by the second week of the semester in which you expect to graduate, or the first week of June during the summer session. A non-refundable $40.00 graduation processing fee will be invoiced by the Bursar's Office during the semester. Complete the following application for Master's Graduation:

https://www4.uwm.edu/gradschool/forms-and-downloads/students/grad_masters_app.cfm

Thesis Submission
Your thesis must be accepted by the Graduate School by the posted submission deadline. Please follow Thesis and Dissertation formatting standards and schedule a 15-minute appointment with Jenna Jazna (jazna@uwm.edu, 229-4234) for a format check of your thesis draft. Submission to the Graduate School must include:

1. An electronic submission of the thesis through ProQuest ETD Administrator. More information on the process can be found on the UWM Electronic Theses and Dissertation website: http://www.graduateschool.uwm.edu/students/current/graduation/electronic-theses-dissertations/


Minimum Credit Registration
You must be registered for at least 1 UWM graduate credit (audit not allowed) during the semester your degree is awarded. If you have met all academic requirements and do not need to take another course, or if you have reached your thesis credit limit, you may enroll in course 888, "Candidate for Degree," if your program offers it. This course does not add to your credit total, apply to your degree, or affect your GPA. You are assessed the equivalent of one graduate credit in fees and receive a grade of S.
Review and Approval
The Graduate School will review your record to ensure that you have fulfilled degree requirements and met Graduate School minimum graduation GPA requirements (cumulative 3.0 on a 4.0 basis). Your graduation application will be forwarded to the School of Freshwater Sciences for its recommendation and approval. When SFS has reviewed and approved your application, it will be returned to the Graduate School.

You cannot graduate with Incomplete, Not Reported, or Progress notations on your record. Transcripts and diplomas will not be released until Hold notations are cleared. The Graduate School has final authorization to grant your degree.

If you do not graduate when anticipated, you must re-apply to graduate in the next semester (with no additional fee.)

Time Limits

The thesis track master's student must complete all degree requirements within five years of initial enrollment.
Master of Science Degree in Freshwater Sciences and Technology Professional Science Track

The Master of Science Professional Science track offers an interdisciplinary science and business program for students who wish to apply their skills in management, industry, or a business setting. The program provides students with the opportunity to participate in a directed research experience through an internship. In addition to freshwater science courses, professional core courses offered through the Lubar School of Business are required to enhance management and communication skills.

Credits and Courses
Minimum degree requirement is 36 graduate credits.

Required core courses (12 credits)
- FRSHWTR 502 Aquatic Ecosystem Dynamics (3 credits)
- FRSHWTR 504 Freshwater Analysis (3 credits)

Two of the following:
- FRSHWTR 506 Environmental Health of Freshwater Ecosystems (3 credits)
- FRSHWTR 508 Freshwater Engineering (3 credits)
- FRSHWTR 510 Freshwater Economics, Policy & Management (3 credits)

Required professional core courses (9 credits)
- BUSMGMT 706 Managing in a Dynamic Environment (3 credits)
- BUSMGMT 723 Managing and Negotiating Across Cultures (3 credits)
- BUSMGMT 715 Leadership, Team Building, and Effective Management (3 credits)
- PHILOS 337 Environmental Ethics (3 credits)

To view a list of additional approved professional core courses, visit:
http://www4.uwm.edu/freshwater/academics/upload/Approved-Professional-Core-Courses.pdf

Elective courses (9 credits)
To be selected in consultation with the student's major professor.

Research-focused internship (3 credits)
- FRSHWTR 980 Graduate Internship (3 credits)

General Timeline for Completion of MS Professional Sciences Track

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<th></th>
<th>Fall semester</th>
<th>Spring Semester</th>
<th>Summer</th>
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<tbody>
<tr>
<td>Year 1</td>
<td>Establish plan of study; Select advisor;</td>
<td>Complete 9 course credits.</td>
<td>Internship (3 credits).</td>
</tr>
<tr>
<td></td>
<td>Begin core course requirements;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Begin professional courses;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Complete 9 course credits.</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td><em>Complete 9 course credits.</em></td>
<td>Complete 6 course credits.</td>
<td></td>
</tr>
</tbody>
</table>
Grade Requirements
An average GPA of 3.0 (4.0 basis) or better is required in all work taken as a graduate student. Students receiving a grade of less than a “B” in coursework or an overall GPA < 3.0 will receive an academic warning from the Graduate Dean. Grades of “D” or “F” are unsatisfactory and do not count in meeting degree requirements. Poor performance will result in the student’s dismissal from the program.

Major Professor as Advisor
Upon admission to the program, each student in the professional science track will be assigned an initial advisor based on their background. The initial advisor will provide counseling to the students and help to identify goals and objectives of their graduate education. Students should identify their permanent advisor during the first semester in the program. The advisor will oversee the student’s internship.

Plan of Study
A plan of study is required and planned by the student in consultation with his or her advisor and the internship coordinators of the program. The plan of study identifies the planned courses and timeline for completion of the degree coursework and internship.

Internship Requirement
All students in the professional science track are required to participate in an internship experience (3 credits). Internship experiences will center on complex regional, national, and global water problems and support student learning relative to identified content, skill, and practice targets. Internship experiences will require learners to apply their knowledge and experience to practical problems in the field, both locally and, potentially, across the globe. Two internship options are available: the Individual and the Group Project Internship. The student will earn three credits in either of the two options.

Option 1: Individual Internship. The Individual Internship is a student work experience with a water-related business, industry, government agency, or research institute that is directly related to your area of study.

Option 2: Group Project Internship. This option is designed as a student group project, accomplished on-site within the industry, government, or non-profit sponsor. The goal of this internship is to foster teamwork amongst students as they collaboratively solve a real-world problem commissioned by the sponsor.

The program coordinators will provide internship opportunities with regional, national, and international partners in industry, government, and non-profit sectors. For Option 1, the student, in consultation with an advisor, will identify the direct supervisor within a specific organization and submit a proposed plan of study that identifies goals and objectives for ‘the’ or ‘his/her’ PSM Internship experience. For Option 2, the team topic selection will be chosen by consultation among the students, their advisor, and a representative from industry, government, and non-profit sectors. Both options require the submission of a proposal that will be reviewed by the program coordinators and approved based on how the internship experience meets program goals, the feasibility of the proposed plan, and the qualifications of the internship supervisor.
Seminars and Colloquia

Students are strongly encouraged to participate actively in the program's seminars and discussion group sessions throughout their time in the program. These sessions are designed to prepare students for their internship experiences and entry into the job market.

Applying for Graduation

Candidate for Master's Degree
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You cannot graduate with Incomplete, Not Reported, or Progress notations on your record. Transcripts and diplomas will not be released until Hold notations are cleared. The Graduate School has final authorization to grant your degree. If you do not graduate when anticipated, you must re-apply to graduate in the next semester (with no additional fee.)

Time Limits

The professional science track master's student must complete all degree requirements within seven years of initial enrollment.