ENVIRONMENTAL CHEMISTRY AND TECHNOLOGY, M.S.

The program has been organized to offer advanced instruction and research training in environmental chemistry and environmental technology leading to the master of science and the doctor of philosophy. A doctoral minor in environmental chemistry and technology is also offered. The program trains candidates for careers in teaching, research, resource management, environmental consulting, and private sector/industrial positions. Areas of work include the development of advanced technologies and materials for air and water purification and for the saving and storage of energies, alternative energy technologies, water and air pollution control, soil and sediment remediation, environmental technology, chemical limnology, and groundwater chemistry.

The M.S. and Ph.D. degrees are designed for students who have a strong background in chemistry and who desire graduate training in applying chemistry to environmental systems. Individual programs are tailored to meet the candidate’s interests through selection of a specialization and elective courses. Areas of specialization include aquatic chemistry, air pollution chemistry, terrestrial chemistry, and chemical- and biotechnology development.

The environmental chemistry and technology program faculty is composed of an interdepartmental committee. Several committee members who have appointments in the Department of Civil and Environmental Engineering are located in the Water Science and Engineering Laboratory. Other members are located in their respective departments.

The environmental chemistry and technology area occupies over 10,000 square feet of office and laboratory space in the Water Science and Engineering Laboratory. Facilities include offices, conference room, classrooms, computer facilities, and over 8,000 square feet devoted to research. The research areas, including trace element and mercury clean laboratories, are designed for research in aquatic chemistry, air pollution chemistry, and environmental technology. Shop facilities (electronics/mechanical) allow fabrication of specialized equipment tailored to the particular field and laboratory research needs. Other specialized facilities include areas for investigations of air pollution chemistry, ceramic membrane technologies, hazardous material remediation, and development of energy storage devices.

In addition to the Water Science and Engineering Laboratory, students also have access to numerous facilities on the UW–Madison campus, including laboratories in the Departments of Soil Science, Chemical and Biological Engineering, Materials Science and Engineering, Chemistry, Geoscience, Civil and Environmental Engineering, the Center for Limnology, and the State Laboratory of Hygiene.

FUNDING

Students accepted into the program can expect to be fully funded through fellowships or assistantships on research projects. Admission decisions are based on the student’s qualifications and research interests, the availability of funding, and the focus of funded research projects. Funding includes a waiver of tuition (excluding segregated fees), health benefits (including family coverage), and a yearly stipend.

REQUIREMENTS

MINIMUM DEGREE REQUIREMENTS AND SATISFACTORY PROGRESS

To make progress toward a graduate degree, students must meet the Graduate School Minimum Degree Requirements and Satisfactory Progress (http://guide.wisc.edu/graduate/#policiesandrequirementstext) in addition to the requirements of the program.

MASTER’S DEGREES

M.S., with available thesis, and report tracks

MINIMUM GRADUATE DEGREE CREDIT REQUIREMENT

30 credits

MINIMUM GRADUATE RESIDENCE CREDIT REQUIREMENT

16 credits

MINIMUM GRADUATE COURSEWORK (50%) REQUIREMENT

Half of degree coursework (15 out of 30 total credits) must be completed in graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university's Course Guide (http://my.wisc.edu/CourseGuideRedirect/BrowseByTitle).

PRIOR COURSEWORK REQUIREMENTS: GRADUATE WORK FROM OTHER INSTITUTIONS

With program approval, students may be allowed to count credits of graduate coursework from other institutions. Coursework earned five or more years prior to admission to a master's degree is not allowed to satisfy requirements.

PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNDERGRADUATE

With program approval, 7 credits from a UW–Madison undergraduate degree are allowed to count toward the degree.

PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNIVERSITY SPECIAL

With program approval, 15 credits taken as a UW–Madison Special student are allowed toward minimum coursework requirements.

CREDITS PER TERM ALLOWED

15 credits

PROGRAM-SPECIFIC COURSES REQUIRED

Students are required to develop a plan of courses with their advisor.

OVERALL GRADUATE GPA REQUIREMENT

3.00 GPA required.
OTHER GRADE REQUIREMENTS
Students must earn a B or above in all courses counting toward degree requirements.

PROBATION POLICY
The status of a student can be one of three options:

1. Good standing (progressing according to standards; any funding guarantee remains in place).
2. Probation (not progressing according to standards but permitted to enroll; loss of funding guarantee; specific plan with dates and deadlines in place in regard to removal of probationary status).
3. Unsatisfactory progress (not progressing according to standards; not permitted to enroll, dismissal, leave of absence or change of advisor or program).

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

ASSESSMENTS AND EXAMINATIONS
The thesis track requires a formal thesis; the report track requires a comprehensive report.

TIME CONSTRAINTS
Master's degree students who have been absent for five or more consecutive years lose all credits that they have earned before their absence. Individual programs may count the coursework students completed prior to their absence for meeting program requirements; that coursework may not count toward Graduate School credit requirements.

LANGUAGE REQUIREMENTS
No language requirements.

ADMISSIONS
Students seeking admission should have a background in the fundamental areas of general, organic, physical, and analytical chemistry. In addition, students should have some background in applied sciences which can be fulfilled with a minimum of 6 credits in natural sciences such as botany, zoology, bacteriology, earth science, material science, biochemistry, or engineering. Students who have not met these requirements must do so prior to the completion of the master's degree. Students must submit Graduate Record Exam (GRE) scores.

LEARNING OUTCOMES

KNOWLEDGE AND SKILLS
• demonstrate a strong understanding of mathematical, scientific, and engineering principles in the field.
• demonstrate an ability to formulate, analyze, and solve advanced engineering problems.
• demonstrate creative, independent problem solving skills.
• apply the latest scientific and technological advancements, advanced techniques, and modern engineering tools to these problems.

PROFESSIONAL CONDUCT
• recognize and apply principles of ethical and professional conduct.

PEOPLE
Faculty: Anderson (Civil and Environmental Engineering), Bleam (Soil Science), Ginder-Vogel (Civil and Environmental Engineering), Harrington (Civil and Environmental Engineering), Helmke (Soil Science), Hurley (chair) (Civil and Environmental Engineering), Karthikeyan (Biological Systems Engineering), McMahon (Civil and Environmental Engineering), Noguera (Civil and Environmental Engineering), Pedersen (Molecular and Environmental Toxicology/Soil Science), Remucal (Civil and Environmental Engineering), Roden (Geoscience), Root (Chemical and Biological Engineering), Schauer (Civil and Environmental Engineering), Thompson (Biological Systems Engineering)