CIVIL AND ENVIRONMENTAL ENGINEERING: WATER RESOURCES ENGINEERING, M.S.

This is a named option within Civil and Environmental Engineering M.S. (http://guide.wisc.edu/graduate/civil-environmental-engineering/civil-environmental-engineering-ms) It is based on coursework only (no research-based thesis).

The Water Resources Engineering named option in the M.S.–CEE from the Department of Civil and Environmental Engineering (https://www.engr.wisc.edu/department/civil-environmental-engineering/academics/accelerated-master-science-programs-civil-environmental-engineering) at the University of Wisconsin–Madison teaches you the scientific and engineering skills to evaluate, plan, and operate water resource and environmental systems.

Our program takes just one year to complete, and focuses on a systems-based approach to managing water resources for societal benefit. You learn principles of water movement through the environment and understand how to best utilize it for municipal and industrial uses, agriculture, and natural ecosystems. You also solve practical problems in hydrology; fluid mechanics; environmental flows in rivers, lake, and coastal environments; and water resource management.

Build the expertise to analyze and design systems that control all aspects of the distribution of water to meet the needs of humans and improve natural resource management. You also analyze and solve scientific and engineering questions through field methods, laboratory experiments, remote-sensing techniques, numerical and statistical modeling, and analytic approaches.

With an M.S.–CEE named option in Water Resources Engineering at UW–Madison, you develop strong quantitative skills in modeling, systems thinking, and sustainability science. Graduate ready to succeed in Madison, you develop strong quantitative skills in modeling, systems thinking, and sustainability science. Graduate ready to succeed in developing and world-changing innovations.

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).

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Deadline</td>
<td>December 15</td>
</tr>
<tr>
<td>Spring Deadline</td>
<td>This program does not admit in the spring.</td>
</tr>
<tr>
<td>Summer Deadline</td>
<td>This program does not admit in the summer.</td>
</tr>
</tbody>
</table>

GRE (Graduate Record Examinations)  Not required.
English Proficiency Test  Every applicant whose native language is not English or whose undergraduate instruction was not in English must provide an English proficiency test score and meet the Graduate School minimum requirements (https://grad.wisc.edu/apply/requirements/#english-proficiency).
Other Test(s) (e.g., GMAT, MCAT)  n/a
Letters of Recommendation Required
Applicants must first meet all of the requirements of the Graduate School. Please visit this website (https://grad.wisc.edu) for details. The application deadline is December 15 for the fall term.
Applicants must also meet department specific requirements as outlined below:

- Have a bachelor's degree in civil and environmental engineering from an ABET-accredited engineering program or from a recognized international institution
- Submit a 1,000 word or fewer statement of purpose; include your technical areas of interest, coursework emphasis, research experience, professional goals, faculty members you are interested in working with, and any other items relevant to your qualifications for graduate school
- Submit three letters of recommendation
- Non-native English speakers must have a Test of English as a Foreign Language (TOEFL) with a score of 580 (written) or 92 (Internet version)

Please do not mail paper copies of application materials. Upload the required application materials to the electronic Graduate School application, including a PDF copy of the most current transcripts. Applicants who are recommended for admission by the CEE Admissions Committee, will receive an e-mail with further instructions from the CEE Graduate Admissions Office, requesting official transcripts or other required application material.

Graduate Application Status will remain "pending" until recommendations are determined. All applicants will receive an e-mail from the CEE Graduate Admissions Team with more details once the admission committees have made decisions.

FUNDING

Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid. Further funding information (https://grad.wisc.edu/funding) is available from
the Graduate School. Be sure to check with your program for individual policies and processes related to funding.

**PROGRAM RESOURCES**

Students in this program are not eligible for department funded opportunities in the form of teaching assistantship (TA), research assistantship (RA), or project assistantship (PA).

**REQUIREMENTS**

**MINIMUM GRADUATE SCHOOL REQUIREMENTS**

Review the Graduate School minimum academic progress and degree requirements (http://guide.wisc.edu/graduate/policiesandrequirements), in addition to the program requirements listed below.

**NAMED OPTION REQUIREMENTS**

**MODE OF INSTRUCTION**

<table>
<thead>
<tr>
<th>Mode of Instruction</th>
<th>Face to Face</th>
<th>Evening/WEEKEND</th>
<th>Online</th>
<th>Hybrid</th>
<th>Accelerated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Mode of Instruction Definitions**

- **Evening/WEEKEND**: These programs are offered in an evening and/or weekend format to accommodate working schedules. Enjoy the advantages of on-campus courses and personal connections, while keeping your day job. For more information about the meeting schedule of a specific program, contact the program.
- **Online**: These programs are offered primarily online. Many available online programs can be completed almost entirely online with all online programs offering at least 50 percent or more of the program work online. Some online programs have an on-campus component that is often designed to accommodate working schedules. Take advantage of the convenience of online learning while participating in a rich, interactive learning environment. For more information about the online nature of a specific program, contact the program.
- **Hybrid**: These programs have innovative curricula that combine on-campus and online formats. Most hybrid programs are completed on-campus with a partial or completely online semester. For more information about the hybrid schedule of a specific program, contact the program.
- **Accelerated**: These on-campus programs are offered in an accelerated format that allows you to complete your program in a condensed time-frame. Enjoy the advantages of on-campus courses with minimal disruption to your career. For more information about the accelerated nature of a specific program, contact the program.

**CURRICULAR REQUIREMENTS**

**Requirements Detail**

- **Minimum Credit Requirement**: 30 credits
- **Minimum Residence Credit Requirement**: 16 credits

- **Minimum Graduate Coursework Requirement**: At least 50% of credits applied toward the graduate degree credit requirement must be completed in graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university’s Course Guide.

- **Overall Graduate GPA Requirement**: 3.00 GPA required.

- **Other Grade Requirements**: The Graduate School requires an average grade of B or better in all coursework (300 or above, not including research credits) taken as a graduate student unless conditions for probationary status require higher grades. Grades of Incomplete are considered to be unsatisfactory if they are not removed during the next enrolled semester.

**Assessments and Examinations**

- **Contact the program for information on required assessments and examinations.**

**Language**

- **Contact the program for information on any language Requirements.**

**REQUIRED COURSES**

This is a face-to-face, accelerated program:

- 30 credit degree program
- Complete the program in one academic year (fall, spring, summer)
- Courses begin in fall semester only
- Take 18 credits from the approved list of specialized courses; up to 6 credits of advanced independent study; 1-2 credits in a graduate student seminar; and up to 6 credits from a second discipline based on your career interests and faculty advisement

Typical curriculum in this program: 12 credits fall semester. 12 credits spring semester. 6 credits summer semester.

**Course Options**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIV ENGR 410</td>
<td>Hydraulic Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 411</td>
<td>Open Channel Hydraulics</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 412</td>
<td>Groundwater Hydraulics</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 414</td>
<td>Hydrologic Design</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 415</td>
<td>Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 416</td>
<td>Water Resources Systems Analysis</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR/G LE 421</td>
<td>Environmental Sustainability Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 423</td>
<td>Air Pollution Effects, Measurement and Control</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 426</td>
<td>Design of Wastewater Treatment Plants</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 427</td>
<td>Solid and Hazardous Wastes Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 428</td>
<td>Water Treatment Plant Design</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 429</td>
<td>Environmental Systems Optimization</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 500</td>
<td>Water Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 501</td>
<td>Water Analysis-Intermediate</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 502</td>
<td>Environmental Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CIV ENGR 514</td>
<td>Coastal Engineering</td>
<td>2-3</td>
</tr>
</tbody>
</table>
CIV ENGR 515 Hydroclimatology for Water Resources Management 3
CIV ENGR 522 Hazardous Waste Management 3
CIV ENGR 618 Special Topics in Hydraulics and Fluid Mechanics 1-3
CIV ENGR 619 Special Topics in Hydrology 1-3
CIV ENGR/ SOIL SCI 623 Microbiology of Waterborne Pathogens and Indicator Organisms 3
CIV ENGR 700 Chemistry of Natural Waters 3
CIV ENGR/ ATM OCN 701 The Chemistry of Air Pollution 2
CIV ENGR 703 Environmental Geochemistry 3
CIV ENGR 704 Environmental Chemical Kinetics 3
CIV ENGR 716 Statistical Modelling of Hydrologic Systems 3
CIV ENGR 721 Biological Principles of Environmental Engineering 3
CIV ENGR 722 Chemical Principles of Environmental Engineering 3
CIV ENGR 723 Energy Principles of Environmental Engineering 3
CIV ENGR/G LE 732 Unsaturated Soil Geoengineering 3
CIV ENGR 821 Environmental Engineering: Biological Treatment Processes 3-4
CIV ENGR 822 Environmental Engineering: Physical/Chemical Treatment Process 3-4
G L E/GEOSCI 594 Introduction to Applied Geophysics 3
G L E/GEOSCI 627 Hydrogeology 3-4
G L E/GEOSCI 629 Contaminant Hydrogeology 3
G L E/GEOSCI 724 Groundwater Flow Modeling 3
MICROBIO/ SOIL SCI 425 Environmental Microbiology 3

POLICIES

GRADUATE SCHOOL POLICIES
The Graduate School’s Academic Policies and Procedures (https://grad.wisc.edu/acadpolicy) provide essential information regarding general university policies. Program authority to set degree policies beyond the minimum required by the Graduate School lies with the degree program faculty. Policies set by the academic degree program can be found below.

NAMED OPTION-SPECIFIC POLICIES

GRADUATE PROGRAM HANDBOOK
The Graduate Program Handbook (https://www.engr.wisc.edu/department/civil-environmental-engineering/academics/ms-phd-civil-and-environmental-engineering) is the repository for all of the program’s policies and requirements.

PRIOR COURSEWORK

Graduate Work from Other Institutions
With program approval, students are allowed to count credits of graduate coursework from other institutions. Approved credits will be allowed to count toward the minimum graduate degree credit requirement and the minimum graduate coursework requirement, but will not count toward the minimum graduate residence credit requirement. Coursework earned five or more years prior to admission to a master’s degree is not allowed to satisfy requirements.

UW–Madison Undergraduate
With program approval, no more than 7 credits of coursework numbered 300 or higher from a UW–Madison undergraduate degree are allowed to count only toward the minimum graduate degree credit requirement. Coursework earned five or more years prior to admission to a master’s degree is not allowed to satisfy requirements.

UW–Madison University Special
With program approval, students are allowed to count up to 15 credits of coursework numbered 300 or above taken as a UW–Madison special student toward the Minimum Graduate Residence Credit Requirement, and the Minimum Graduate Degree Credit Requirement; those courses numbered 700 or above may be applied toward the Minimum Graduate Coursework (50%) Requirement. Coursework earned five or more years prior to admission to a master’s degree is not allowed to satisfy requirements.

PROBATION
The Graduate School regularly reviews the record of any student who earned grades of BC, C, D, F, or Incomplete in a graduate course (300 or above), or grade of U in research credits. This review could result in academic probation with a hold on future enrollment or in being suspended from the Graduate School.

ADVISOR / COMMITTEE
Every graduate student is required to have an advisor. To ensure that students are making satisfactory progress toward a degree, the Graduate School expects them to meet with their advisor on a regular basis.

In many cases, an advisor is assigned to incoming students. Students can be suspended from the Graduate School if they do not have an advisor. An advisor is a faculty member, or sometimes a committee, from the major department responsible for providing advice regarding graduate studies.

A committee often accomplishes advising for the students in the early stages of their studies.

CREDITS PER TERM ALLOWED
15 credits

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.

OTHER
Students in the accelerated MS (named options) are not eligible for department funded opportunities.
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.

PEOPLE

Civil and Environmental Engineering Faculty: Professors Noyce (chair), Adams, Bahia, Cramer, Hanna, Harrington, Hurley, Likos, Loheide, McMahon, Noguera, Park, Parra-Montesinos, Ran, Russell, Schauer, Wu; Associate Professors Ahn, Block, Fratta, Pincheira, Remucal, Tinjum; Assistant Professors Blum, Gadikota, Ginder-Vogel, Hampton, Hicks, Prabhakar, Pujara, Sone, Wang, Wright, Zhu. M.Eng Program Director Carlson. See also CEE faculty (http://directory.engr.wisc.edu/cee/faculty).

Geological Engineering Faculty: Professors Likos (director) (Civil and Environmental Engineering), Feigl (Geoscience), Goodwin (Geoscience), Holloway (Nelson Institute), Loheide (Civil and Environmental Engineering), Thurber (Geoscience), Tikoff (Geoscience), Wu (Civil and Environmental Engineering); Associate Professors Cardiff (Geoscience), Fratta (Civil and Environmental Engineering), Tinjum (Civil and Environmental Engineering); Assistant Professors Gadikota (Civil and Environmental Engineering), Ginder-Vogel (Civil and Environmental Engineering), Hampton (Civil and Environmental Engineering), Hicks (Civil and Environmental Engineering), Sone (Civil and Environmental Engineering), Zoet (Geoscience); Professor of Practice Pakes (Grainger). See also GLE faculty (https://www.engr.wisc.edu/geological-engineering/people).

Environmental Chemistry and Technology: Professors Hurley (director) (Civil and Environmental Engineering), Bleam (Soil Science), Harrington (Civil and Environmental Engineering), Karthikeyan (Biological Systems Engineering), McMahon (Civil and Environmental Engineering/Bacteriology), Pedersen (Soil Science), Roden (Geoscience), Root (Chemical and Biological Engineering), Schauer (Civil and Environmental Engineering), Thompson (Biological Systems Engineering); Associate Professors Bertram (Chemistry), Remucal (Civil and Environmental Engineering); Assistant Professors Anantharaman (Bacteriology), Ginder-Vogel (Civil and Environmental Engineering), Gadikota (Civil and Environmental Engineering), Whitman (Soil Science). See also ECT Faculty (https://www.engr.wisc.edu/academics/graduate-academics/environmental-chemistry-technology).