ACCELERATED CIVIL ENGINEERING, M.S.E.

Program Details

Department: Civil Engineering
Modality: In-person
Concentrations: n/a
Semester Hours: 6

This program is designed for LMU students to receive a combined B.S.E. and M.S.E. degree by continuing their studies in LMU's Masters programs, immediately following their B.S.E. degree. The program allows students to complete the M.S.E. degree in one year.

The candidate for the combined B.S.E./M.S.E. degree must satisfy the following requirements:

- One Frank R. Seaver College of Science and Engineering 500/5000-level course (3-4 semester hours) taken as an undergraduate may count toward the M.S.E. degree. This course can be double counted for the B.S.E. degree and the M.S.E. degree. The student is required to complete 26-27 additional semester hours beyond earning the B.S.E degree.
- In addition, for an admitted student, an extra Seaver College 500/5000-level course (3-4 semester hours) may be taken in their senior year that counts towards the M.S.E. degree and not the B.S.E. degree. This potentially reduces the total number of additional semester hours after earning the B.S.E. degree to 22-24.
- The remaining coursework required must be consistent with the graduation requirements for the M.S.E. in Electrical Engineering program.

The Master of Science in Civil Engineering program aims to position working professionals and graduates with science and engineering backgrounds interested in earning an advanced degree to gain a deeper understanding of principles required to solve 21st century environmental problems and sustainably manage our water and infrastructure resources for future generations. In our career-advancing evening master's program, students can specialize in:

- **Environmental Engineering**, with a focus on the most advanced, proven, and sustainable approaches to protect and improve water quality in urban and natural settings through effective management of pollution sources
- **Water Resources Engineering**, centered on the sustainable management, theory, and modeling of hydrological processes in natural systems and water conveyance, storage, and flood protection in urban systems

Students in the program can benefit from:

- **Strong Industry Ties:** Our modern and professionally relevant courses are taught by faculty distinguished in industry and academia.
- **Science to Engineering Pathway:** Students with non-engineering undergraduate degrees can earn a degree in civil engineering by passing the Fundamentals of Engineering Examination and completing the required coursework.
- **Evening Program:** Courses are offered in the evening to accommodate both full#time students and working professionals.

Program Educational Objectives

The Civil Engineering graduate program has established the following program educational objectives that are consistent with the mission of the University and that describe the expected accomplishments of graduates during the first several years following graduation. Graduates in the Civil Engineering (environmental engineering and water resources engineering) program will:

1. Apply critical thinking and problem-solving skills in their professions to work towards solving society's 21st century engineering issues and challenges;
2. Demonstrate and apply ethical, socially equitable, and sustainable practices and principles to issues in their profession; and
3. Advance in their careers by staying current in the field, working on interdisciplinary teams, and/or obtaining professional registration or other professional certifications.

To accomplish these program educational objectives, analysis and design courses in the fields of water resources, hydraulics, environmental engineering and environmental science with an emphasis on sustainability are offered. Additional opportunities are available to broaden the educational experience through courses in other departments, independent study and directed research resulting in a thesis with director consent. A broad base of theory and design is provided integrating current issues and professional practices.

Program Learning Outcomes

Upon successful completion of the M.S.E. in Civil Engineering program, graduates will be able to:

1. Apply scientific, mathematical, and sustainability principles to analyze and develop solutions to problems in environmental science and engineering.
2. Critically assess, evaluate, and understand sustainability, ethics, and social justice in environmental science and engineering.
3. Effectively communicate scientific and engineering principles related to the environment and sustainability.

Admission Requirements

All applicants must hold a Bachelor's degree in Civil Engineering or other closely related engineering fields.

Interested applicants who have earned a bachelor's degree in a discipline outside of engineering and hold a valid Professional Engineering (P.E.) license or have passed the Fundamentals of Engineering (F.E.) exam may apply for admission consideration to the M.S.E. in Civil Engineering. Please note, you should submit a verifiable link in your application as an additional document if you hold a valid P.E. license or have passed the F.E. exam.

Applicants whose undergraduate degree is in a discipline outside of engineering and who do not hold a P.E. license nor passing results in the F.E. Exam are encouraged to apply for admission to our M.S. in Environmental Science instead. Graduate students enrolled in the M.S. in Environmental Science program may explore the Change of Program option into the M.S.E. in Civil Engineering program. Students interested in this option should consult their academic advisor as soon as possible to develop an appropriate academic plan. They must also pass the Fundamentals of Engineering (F.E.) exam or hold a valid

Professional Engineer (P.E.) license and be in good academic standing before submitting a Change of Academic Program Petition.

All applicants are required to submit:

- A completed application form (https://graduatestudies.lmu.edu/apply/) and $50 application fee
- Official Transcripts of all colleges and universities attended
- A letter of intent (approximately 1.5 pages) describing the candidate's background, career goals, and interest in the program
- Two letters of recommendation attesting to the candidate's ability to succeed in the graduate program based on previous academic and/or professional performance

The GRE is not required for admission into the Civil Engineering Master's Program. International applicants should submit the items listed above plus the additional items required by LMU Graduate Admission (https://graduate.lmu.edu/apply/internationalstudents/).

Deferment Policy: Students admitted into this graduate program may defer their admission offer for up to one year from the initial admission entry term. A formal request should be made by the student. Requests to defer past the one-year mark from the initial admission entry term are reviewed upon request, and the decision is left to the discretion of the Admission Committee.

Transfer Credit: Students may transfer up to six (6) semester hours for courses completed at another regionally accredited college or university. Credits to be transferred must be taken prior to admission. Each transferred course grade must be at least B (3.0), and the course must not have been used to satisfy degree requirements at another college or university.

Appeal Process: The appeal process should be sought after once an admission decision has been provided, and the applicant would like to be reconsidered. To explore the appeal process, the applicant should be prepared to present new evidence of admissibility via new/additional/updated documentation aside from what was presented during the initial admission submission. Such documentation can be in the form of final grades, providing proof of updated relevant course completion and grade/s, etc.

In addition to the documents provided, the student will be required to submit a short essay stating why they are interested in having their application be reconsidered and explain how the new/updated documentation provided shows improvement for admission reconsideration. The admissions team will review the submission of all new documentation and provide the applicant with an updated decision. To request more information about this process, interested candidates in this option may contact SeaverGraduateAdmission@lmu.edu.

Program Requirements

(30 Semester Hours)

Students enrolled in this program must successfully complete the following:

- 30 semester hours with a cumulative grade point average of 3.0 ("B")
- CIVL 690 Comprehensive Oral Exam or CIVL 696 Thesis Defense or ENVS 696 Thesis Defense
- 500-level courses with grade of B (3.0) or higher
- All core and elective requirements for the Water Resources Engineering or the Environmental Engineering emphasis.

To be awarded a Master of Science in Civil Engineering (either track), all students must either possess a bachelor's degree in engineering **or** have passed the Engineer-in-Training/Fundamentals of Engineering (EIT/FE) examination (https://ncees.org/exams/fe-exam/) administered by the National Council of Examiners for Engineering and Surveying (NCEES). Students who do not meet this condition will receive a Master of Science degree in Environmental Science.

Optional Thesis

Preparation of a master's thesis under the guidance of a faculty member is optional in both the Civil Engineering and Environmental Science Master's programs. Students electing to perform a master's thesis must pass CIVL 696 Thesis Defense or ENVS 696 Thesis Defense in the semester they expect to complete their thesis. The defense is in the form of a written thesis and an oral presentation. A thesis committee, selected by the student and primary research advisor, determines if the student has mastered the subject matter of the thesis, understands the work done by others, and can critically assess that work and his/her own work. No later than two weeks prior to the thesis defense presentation, the student must provide their written thesis to their thesis committee for review. Students who elect to prepare a master's thesis are not required to take the CIVL 690 Comprehensive Oral Exam. Formal requirements may be obtained from the Chariperson. Please see our research page (https://cse.lmu.edu/graduateprograms/msce/research/) for further information on research opportunities.

Thesis students also have the option to enroll in a 3-semester-hour master's thesis Independent Study (CIVL 695 Master Thesis or ENVS 695 Master Thesis) in any term with Chairperson and thesis advisor consent. The master's thesis Independent Study can satisfy a Global Perspectives Elective requirement, may be taken a maximum of two times, and may be taken only once in a semester.

Change of Emphasis (Environmental Engineering or Water Resources Engineering)

Civil Engineering graduate students can choose an emphasis in one of two areas: Environmental Engineering or Water Resources Engineering. Students have the option to switch from the Water Resources Engineering emphasis to the Environmental Engineering emphasis and vice versa or to Environmental Science any time before graduation. Prior to changing emphasis, the student's plan should be discussed with and approved by the Chairperson.

Required courses for each field of study

M.S.E. in Civil Engineering with emphasis in Environmental Engineering

Code	Title	Semester Hours
Core Requirements		
CIVL 601	Sustainable Water Quality and Resources	3
CIVL 605	Aquatic Chemistry	3
ENVS 606	Applied Environmental Microbiology	3
CIVL 617	Water Treatment Processes	3
CIVL 625	Applied Fluid Mechanics [1]	3
Select one of the following:		0
CIVL 690	Comprehensive Oral Exam	
CIVL 696	Thesis Defense	

ENVS 696	Thesis Defense	
Subtotal		15
Technical Electives		
Select at least three of the following:		9
CIVL 608	Contaminant Fate, Transport, and Remediation	
CIVL 618	Water Reuse and Desalination	
CIVL 619	Advanced Integrated Water Treatment Systems	
CIVL 626	Surface Water Hydrology	
CIVL 627	Urban Water Systems and Stormwater Management	
CIVL 628	Groundwater Hydrology and Sustainable Management	
CIVL 629	Groundwater Contaminant Transport and Remediation	
CIVL 647	Dams and Levees	
CIVL 651	Remote Sensing with Civil Engineering and Environmental Science Applications	
CIVL 653	Modeling Environmental and Water Resources Systems	
CIVL 673	Economics of Water and the Environment	
ENVS 607	Environmental Engineering and Science Lab	
ENVS 652	Spatial Data Analysis and Geographical Information Systems	
Subtotal		9
Global Perspectives Electives		
Select up to two of the following:		6
CIVL 671	Air Quality, Control, and Management	
CIVL 672	Sustainable Waste Management	
CIVL 674	Sustainable Engineering	
ENVS 680	Engineering Geology	
ENVS 681	Ecosystem Services in Urban Landscapes	
ENVS 682	Urban Coasts: Habitats, Stressors, and Resilience	
ENVS 683	Environmental Toxicology and Health Risk	
ENVS 684	Climate Change and Impacts	
ENVS 686	Climate Change Mitigation	
ENVS 687	Climate Change Adaptation and Resilience	
ENVS 688	Environmental Health	
ENVS 689	Sustainability, Health, and Equity	
CIVL/ENVS 699	Independent Studies [2]	
CIVL 695	Master Thesis [3]	
Up to one 500- or 600-level course in another graduate program with Chairperson		
Subtotal		6
Total Semester Hours		**30**

[1] Students who have previously passed an upper division undergraduate- or graduate-level fluid mechanics course may substitute CIVL 625 Applied Fluid Mechanics with a Technical or Global Perspectives elective.

[2] up to one with Chairperson consent

[3] up to two with Chairperson consent

M.S.E. in Civil Engineering with emphasis in Water Resources Engineering

Code	Title	Semester Hours
Core Requirements		
CIVL 601	Sustainable Water Quality and Resources	3
CIVL 625	Applied Fluid Mechanics [1]	3
CIVL 626	Surface Water Hydrology	3
CIVL 627	Urban Water Systems and Stormwater Management	3
CIVL 628	Groundwater Hydrology and Sustainable Management	3
CIVL 653	Modeling Environmental and Water Resources Systems	3
Select one of the following:		0
CIVL 690	Comprehensive Oral Exam (Non-thesis students)	
CIVL 696	Thesis Defense (Thesis students)	
ENVS 696	Thesis Defense (Thesis students)	
Subtotal		18
Technical Electives		
Select at least three of the following:		9
CIVL 605	Aquatic Chemistry	
CIVL 608	Contaminant Fate, Transport, and Remediation	
CIVL 617	Water Treatment Processes	
CIVL 618	Water Reuse and Desalination	
CIVL 619	Advanced Integrated Water Treatment Systems	
CIVL 629	Groundwater Contaminant Transport and Remediation	
CIVL 647	Dams and Levees	
CIVL 651	Remote Sensing with Civil Engineering and Environmental Science Applications	
CIVL 673	Economics of Water and the Environment	
ENVS 606	Applied Environmental Microbiology	
ENVS 607	Environmental Engineering and Science Lab	
ENVS 652	Spatial Data Analysis and Geographical Information Systems	
Subtotal		9
Global Perspectives Electives		
Select up to one of the following:		3
CIVL 671	Air Quality, Control, and Management	
CIVL 672	Sustainable Waste Management	
CIVL 674	Sustainable Engineering	
ENVS 680	Engineering Geology	
ENVS 681	Ecosystem Services in Urban Landscapes	
ENVS 682	Urban Coasts: Habitats, Stressors, and Resilience	
ENVS 683	Environmental Toxicology and Health Risk	
ENVS 684	Climate Change and Impacts	
ENVS 686	Climate Change Mitigation	
ENVS 687	Climate Change Adaptation and Resilience	
ENVS 688	Environmental Health	
ENVS 689	Sustainability, Health, and Equity	
CIVL 699 and ENVS 699	Independent Studies and Independent Studies [2]	
CIVL 695	Master Thesis [3]	

Up to one 500- or 600-level course in another graduate program with Chairperson		
Subtotal		3
Total Semester Hours		**30**

Code	Title	Semester Hours
Core Requirements		
CIVL 601	Sustainable Water Quality and Resources	3
CIVL 625	Applied Fluid Mechanics [1]	3
CIVL 626	Surface Water Hydrology	3
CIVL 627	Urban Water Systems and Stormwater Management	3
CIVL 628	Groundwater Hydrology and Sustainable Management	3
CIVL 653	Modeling Environmental and Water Resources Systems	3
Select one of the following:		0
CIVL 690	Comprehensive Oral Exam (Non-thesis students)	
CIVL 696	Thesis Defense (Thesis students)	
ENVS 696	Thesis Defense (Thesis students)	
Subtotal		18
Technical Electives		
Select at least three of the following:		9
CIVL 605	Aquatic Chemistry	
CIVL 608	Contaminant Fate, Transport, and Remediation	
CIVL 617	Water Treatment Processes	
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CIVL 673	Economics of Water and the Environment	
ENVS 606	Applied Environmental Microbiology	
ENVS 607	Environmental Engineering and Science Lab	
ENVS 652	Spatial Data Analysis and Geographical Information Systems	
Subtotal		9
Global Perspectives Electives		
Select up to one of the following:		3
CIVL 671	Air Quality, Control, and Management	
CIVL 672	Sustainable Waste Management	
CIVL 674	Sustainable Engineering	
ENVS 680	Engineering Geology	
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ENVS 687	Climate Change Adaptation and Resilience	
ENVS 688	Environmental Health	
ENVS 689	Sustainability, Health, and Equity	
CIVL 699 and ENVS 699	Independent Studies and Independent Studies [2]	
CIVL 695	Master Thesis [3]	
Up to one 500- or 600-level course in another graduate program with Chairperson		
Subtotal		3
Total Semester Hours		**30**

1. Students who have previously passed an upper division undergraduate- or graduate-level fluid mechanics course may substitute CIVL 625 Applied Fluid Mechanics with a Technical or Global Perspectives elective.
2. up to one with Chairperson consent
3. up to two with Chairperson consent