

CIVIL AND ENVIRONMENTAL ENGINEERING, MASTER OF SCIENCE (M.S.)

Students are required to complete 30 credits within one of the five specializations. Students complete a set of core courses as well as electives. The M.S. degree program offers a thesis option and very rarely a non-thesis option. Applicants who do not wish to complete a thesis are encouraged to consider the Professional Master of Engineering (ENPM) degree instead: <https://academiccatalog.umd.edu/graduate/programs/civil-environmental-engineering-pmce/>

THESIS OPTION:

- At least 24 credits of coursework are required beyond the B.S. degree, including a minimum of 18 credits at the 600 level or above.
- In addition, six credits of ENCE799 are required.

NON-THESIS OPTION:

- At least 30 credits of coursework are required beyond the B.S. degree, including a minimum of 24 credits at the 600 level or above.
- In addition, students are required to complete a scholarly paper.

Course	Title	Credits
Specialization Requirements (select one)		30
1. Disaster Resilience		
Students must complete at least one course listed in the following knowledge areas. All courses must be approved by advisor.		
Resilience and Infrastructure Fundamentals		
ENCE632	Introduction to Infrastructure and Resilience	
Hazard and Threat Assessment		
ENCE633	Assessment of Natural Hazards for Engineering Applications	
ENCE431	Hydrologic Engineering	
ENCE630		
Other courses in the topical area, at the discretion of the advisor		
Risk Assessment and Modeling of Systems		
ENCE622	Construction Automation & Robotics	
ENCE620	Risk Analysis in Engineering and Economics	
ENRE670	Probabilistic Risk Assessment	
Other courses in topical area, at the discretion of the advisor		
Data Analysis and Modeling		
ENCE688	Advanced Topics in Civil Engineering (688J Data Analysis in the Built Environment)	
ENCE689	Seminar (689X Statistical and Machine Learning Models for Natural Hazards Protection)	
Other courses in topical area, at the discretion of the advisor		
Contexts for Resilience and Sustainability		
ENCE688	Advanced Topics in Civil Engineering (688T Disaster Resilience Seminar)	
2. Environment and Resources		
Students must complete three of the five courses listed below.		
ENCE650	Process Dynamics in Environmental Systems	
ENCE651	Chemistry of Natural Waters	

ENCE652	Microbiological Principles of Environmental Engineering
ENCE431	Hydrologic Engineering
ENCE432	Ground Water Hydrology

3. Infrastructure Systems

Students must complete at least three courses from the list below.

Design

ENCE641	Advanced Foundations Systems
ENCE741	Earth Retaining Structures
ENCE710	Steel Structures I
ENCE713	Concrete Structures I
ENCE717	Bridge Structures
ENCE688	Advanced Topics in Civil Engineering (688W Timber Design)

Analysis

ENCE647	Slope Stability and Seepage
ENCE640	Advanced Soil Mechanics
ENCE610	Fundamentals of Structural Analysis
ENCE613	Structural Dynamics

Simulation

ENCE611	Finite Element Methods
ENCE644	

4. Project Management

Students must complete all of the courses listed below.

ENCE661	Project Cost Accounting and Finance
ENCE662	Introduction to Project Management
ENCE664	Legal Aspects of Engineering Design and Construction
ENCE665	Management of Project Teams
ENCE627	Project Risk Management

5. Transportation and Mobility

Students must complete all of the courses listed below.

ENCE670	Highway Traffic Characteristics and Measurements
ENCE672	Regional Transportation Planning
ENCE673	Urban Transportation
ENCE677	OR Models for Transportation Systems Analysis
ENCE688	Advanced Topics in Civil Engineering (688I Discrete Choice Analysis)