



MS Degree Course Requirement

Department of Civil and Environmental Engineering

Requirements	Course Number	# Credits
MANDATORY COURSEWORK		
<u>Graduate Core Courses:</u> <ul style="list-style-type: none"> Minimum Core Course requirements are determined by the Technical Area. See page 2 for a list of core courses by Technical Area 	1.	
	2.	
	3.	
	4.	
	5.	
	Total Core Credits:	
<u>Graduate Technical Elective Courses:</u> <ul style="list-style-type: none"> Students may select other courses from their Technical Area or ENCE as Technical Electives with advisor approval. Courses outside of ENCE must be pre-approved by their advisor. 	1.	
	2.	
	3.	
	4.	
	5.	
	6.	
	Total Technical Credits:	
Additional Course Requirements and Electives		
<u>400-level Courses:</u> <ul style="list-style-type: none"> No more than 6 credits at the 400-level may be included. Transfer courses count as 400-level. Maximum 6 credits transferred graduate coursework. 	1.	
	2.	
	Total 400 Credits (no more than 6):	
<u>Graduate Master's Thesis:</u> <ul style="list-style-type: none"> MS Thesis students must take a minimum of 6 credits of ENCE799: Master's Thesis Research 	ENCE799	
	Total Credits (minimum of 6):	
	Total MS credits:	30

Additional Requirements:

- All MS Non-Thesis students must complete a Scholarly Paper and Comprehensive Exam.
- All MS Thesis students must successfully defend their thesis and complete a Comprehensive Exam.
- A minimum overall GPA of 3.0 must be maintained.
- Courses taken at UMD must be no more than 5 years old at the time of graduation and transfer courses no more than 7 years old.

Required Courses by Technical Area

Civil Systems Required Core Courses

All Civil Systems students must take one course in each of the following areas:

1. **Systems:** ENSE 621: Systems Modeling and Design or ENSE 622: Systems Requirements, Design and Tradeoff Analysis
2. **Operations Research/Optimization:** ENCE 603: Management Science Applications in Project Management or ENCE 677: OR Models for Transportation Systems Analysis
3. **Sensing and Control:** ENCE 688A: Sensing and Control Systems

Environmental Required Core Courses

1. ENCE 650: Process Dynamics of Environmental Systems
2. ENCE 651: Chemistry of Natural Waves
3. ENCE 637: Biological Principles of Environmental Engineering

Geotechnical Required Core Courses

Geotechnical Students must select from Geotechnical course offerings in consultation with their advisor.

Project Management Required Core Courses

1. ENCE 627: Project Risk Management
2. ENCE 661: Project Cost Accounting and Finance
3. ENCE 662: Introduction to Project Management
4. ENCE 664: Legal Aspects of Engineering Design and Construction
5. ENCE 665: Management of Project Teams

Structures Required Core Courses

Structures students must select from Structures course offerings in consultation with their advisor.

Transportation Required Core Courses

Transportation students must select from Transportation course offerings in consultation with their advisor

Water Resources Required Core Courses

1. ENCE 431: Hydrologic Engineering
2. ENCE630: Environmental and Water Resources Systems I