Students in the Master of Engineering in civil and environmental engineering program must focus on one of four areas of study:

- Geotechnical and pavements
- Structures
- Environmental and Water Resources
- Transportation

In addition to the recommended courses in a given area, students may select technical electives approved by the academic advisor. All electives must be part of an integrated program of study. There is no research or thesis required for this degree.

**Graduate Certificate in Engineering: 12 credits or 4 courses**

Students pursuing a Certificate in Engineering must focus on one of four areas of study. See website for more details on course requirements: [https://advancedengineering.umd.edu/civil-environmental](https://advancedengineering.umd.edu/civil-environmental)

### Geotechnical and Pavements:
- ENCE441 Foundation Design
- ENCE447 Pavement Engineering
- ENCE640 Advanced Soil Mechanics
- ENCE641 Advanced Foundations Systems
- ENCE643 Theory of Soil Strength
- ENCE644 Adv. Pavement and Civil Engineering Materials
- ENCE645 Geotechnics of Waste Disposal
- ENCE646 Geosynthetic Engineering
- ENCE647 Slope Stability and Seepage
- ENCE740 Computational Geomechanics
- ENCE741 Earth Retaining Structures
- ENCE743 Soil Dynamics and Earthquake Engineering
- ENCE744 QA/QC and Specification for Highway Materials

### Structures:
- ENCE610 Fundamentals of Structural Analysis
- ENCE611 Finite Element Methods
- ENCE613 Structural Dynamics
- ENCE614 Computer Methods in Engineering
- ENCE710 Steel Structures I
- ENCE711 Steel Structures II
- ENCE712 Masonry Structures
- ENCE713 Concrete Structures I
- ENCE714 Concrete Structures II
- ENCE715 Earthquake Engineering
- ENCE716 Forensic Engineering
- ENCE717 Bridge Structures
- ENCE718 Advanced Structural Systems

### Environmental and Water Resources:
- ENCE630 Environmental and Water Resource Systems I
- ENCE631 Hydrologic and Nonpoint Pollution Models
- ENCE634 River Engineering
- ENCE635 Geographic Info. Systems for Watershed Analysis
- ENCE652 Biological Principles of Environmental Engineering
- ENCE650 Process Dynamics in Environmental Systems
- ENCE651 Chemistry of Natural Waters
- ENCE655 Environmental Behavior of Organic Pollutants
- ENCE730 Environmental and Water Resource Systems II
- ENCE753 Unit Operations of Environmental Engineering

**Additional electives must be approved by academic advisor.**

ENCE756 Bioremediation
# Preliminary 10-Course Plan

**Civil and Environmental Engineering**

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