Universidad Politécnica de Puerto Rico
Graduate School
Master Program in Civil Engineering

<table>
<thead>
<tr>
<th>M.S.C.E.* (Thesis Option)</th>
<th>M.E.C.E.* (Design Project Option)</th>
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<tr>
<td>Required Courses: 6 credit-hours</td>
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** Structural Engineering **

** MSCE Required Courses **
- CE 6900 – Introduction to Research in Civil Engineering
- CE 6370 – Finite Element Methods in Engineering

** MECE Required Courses **
- CE 6370 – Finite Element Methods in Engineering

** Major Area Courses **
- CE 5108 – Prestressed Concrete Structures Design
- CE 5116 – Design of Wood Structures
- CE 6300 – Structural Engineering Laboratory
- CE 6305 – Simulation Engineering Laboratory
- CE 6315 – Analysis of Plates and Shells
- CE 6320 – Advanced Strength of Materials
- CE 6323 – Design of Composite Materials
- CE 6325 – Principles of Structural Stability
- CE 6330 – Advanced Topics in Structural Engineering
- CE 6335 – Advanced Foundations
- CE 6340 – Advanced Bridge Design
- CE 6345 – Design of Reinforced Masonry Structures
- CE 6350 – Dynamics of Structures
- CE 6355 – Advanced Earthquake Engineering
- CE 6357 – Wind Engineering
- CE 6360 – Bridge Inspection, Rehabilitation, Repair, and Management
- CE 6375 – Advanced Finite Element Methods in Engineering
- CE 6378 – Advanced Reinforced Concrete Design
- CE 6380 – Nonlinear Behavior of Concrete Structures
- CE 6385 – Advanced Steel Design
- CE 6390 – Lateral Load Distribution in Multistory Buildings
- CE 6395 – Nonlinear Analysis of Soil-Structure Interaction

** Out-of-Major Area Courses **
The student may select 6 credits (Thesis or Project options) as Out-of-Major Area elective from any other CE graduate or advanced undergraduate courses.

** Thesis **
- CE 6901
- CE 6902

** Design Project **
- CE 6905
- CE 6906

*Note: A maximum of 6 credit-hours in advanced undergraduate courses (Level 5000) can be taken.
** Students are allowed to replace Out-of-Major courses with Major Area courses.

Contact Information:
Graduate School
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Phone: 787-622-8000 Ext. 686
Universidad Politécnica de Puerto Rico  
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Geotechnical Engineering

**Major Area Courses**

**MSCE Required Courses**
CE 6900 – Introduction to Research in Civil Engineering  
CE 6370 – Finite Element Methods in Engineering

**MECE Required Courses**
CE 6370 – Finite Element Methods in Engineering

**Out-of-Major Area Courses**

The student may select 6 credits (Thesis or Project options) as Out-of-Major Area elective from any other CE graduate or advanced undergraduate courses.

**Thesis**
CE 6901  
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**Design Project**
CE 6905  
CE 6906

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Water Resources and Water Treatment

**MSCE Required Courses**
- CE 6900 – Introduction to Research in Civil Engineering
- CE 6210 – Probability and Statistics in Water Resources

**MECE Required Courses**
- CE 6210 – Probability and Statistics in Water Resources

**Major Area Courses**
- CEE 5020 – Environmental Laws and Regulations
- CEE 5030 – Advanced Hydraulics
- ENVE 5620 – Environmental Audits
- ENVE 5670 – Environmental Remediation
- CE 6220 – Meteorology
- CE 6230 – Groundwater Hydrology
- CE 6240 – Urban Drainage
- CE 6250 – Advanced Hydrologic and Hydraulic Models
- CE 6260 – Analysis and Restoration of Fluvial Systems
- CE 6270 – Sedimentation Engineering
- CE 6280 – Reservoir Analysis and Design
- CE 6410 – Water and Wastewater Treatment Applications
- CE 6420 – Fate and Transport of Contaminants in Soils
- CE 6430 – Remediation in Contaminated Subsurface Environments
- CE 6440 – Physical and Chemical Treatment Processes of Water and Wastewater
- CE 6450 – Biological Wastewater Treatment Processes
- CE 6460 – Water Quality Control and Management

**Out-of-Major Area Courses**
The student may select 6 credits (Thesis or Project options) as Out-of-Major Area elective from any other course labeled as CE 6xxx, MEM 69xx or EPM 6xxx and CE advanced undergraduate courses.

**Thesis**
- CE 6901
- CE 6902

**Design Project**
- CE 6905
- CE 6906

*Note: A maximum of 6 credit-hours in advanced undergraduate courses (Level 5000) can be taken.

**Students are allowed to replace Out-of-Major courses with Major Area courses.**

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Construction Engineering

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**Students are allowed to replace Out-of-Major courses with Major Area courses.

MSCE Required Courses
CE 6900 – Introduction to Research in Civil Engineering
CE 6532 – Construction Cost Control

MECE Required Courses
CE 6532 – Construction Cost Control

Major Area Courses
CE 5510 – Planning Scheduling and Cost Estimates
CE 5522 – Construction Documents for Civil Engineering
CE 6512 – Value Engineering
CE 6520 – Construction Contracting and Procurement
CE 6530 – Schedule Impact Analysis
CE 6540 – Construction Equipment Administration
CE 6542 – Construction Material Management
CE 6544 – Hazardous Material Management
CE 6550 – Construction Inspections
CE 6560 – Construction Safety and Regulations
CE 6570 – Modern Construction Materials
CE 6580 – Temporary Structures in Construction
CE 6585 – Site Planning and Design

Out-of-Major Area Courses
The student may select 6 credits (Thesis or Project options) as Out-of-Major Area elective from any other course labeled as CE 6xxx, MGM 5xxx, MEM, or EPM and CE advanced undergraduate courses.

Thesis
CE 6901
CE 6902

Design Project
CE 6905
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