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

Structural Engineering

**MSCE Required Courses**
- CE 6370 – Finite Element Methods in Engineering
- GMP 6510 – Research Methodology

**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 GMP, 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
E-mail: escuelagraduada@pupr.edu
Phone: 787-622-8000 Ext. 686
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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<tbody>
<tr>
<td>Required Courses: 6 credit-hours</td>
<td>Required courses: 3 credit-hours</td>
</tr>
<tr>
<td>Major Area: 18 credit-hours</td>
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Geotechnical Engineering

### MSCE Required Courses
- CE 6370 – Finite Element Methods in Engineering
- GMP 6510 – Research Methodology

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

### Major Area Courses
- CE 5208 – Soil Improvement
- CE 5220 – Pavement Design
- CE 6100 – Soil Shear Strength
- CE 6105 – Advanced Geotechnical Engineering Applications
- CE 6110 – Earth Retaining Structures
- CE 6114 – Shallow Foundations
- CE 6116 – Consolidation Theory and Applications
- CE 6120 – Deep Foundations
- CE 6125 – Soil Dynamics
- CE 6130 – Geotechnical Earthquake Engineering
- CE 6140 – Slope Stability
- CE 6150 – Seepage & Drainage
- CE 6230 – Groundwater Hydrology
- CE 6270 – Sedimentation Engineering
- CE 6335 – Advanced Foundations
- CE 6395 – Nonlinear Analysis of Soil-Structure Interaction
- CE 6430 – Remediation in Contaminated Subsurface Environments

### Out-of-Major Area Courses
The student may select 6 credits (Thesis or Project options) as Out-of-Major Area elective from any other GMP, 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.

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

Water Resources and Water Treatment

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### MSCE Required Courses
- CE 6210 – Probability and Statistics in Water Resources
- GMP 6510 – Research Methodology

### 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, GMP 6xxx, MEM 69xx or EPM 6xxx and CE advanced undergraduate courses.

### Thesis
- CE 6901
- CE 6902

### Design Project
- CE 6905
- CE 6906
Universidad Politécnica de Puerto Rico
Graduate School
Master Program in Civil Engineering

Construction Engineering

**M.S.C.E.* (Thesis Option)**

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**Major Area Courses**

- CE 6532 – Construction Cost Control
- GMP 6510 – Research Methodology
- 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, GMP 6xxx, MGM 5xxx, MEM, or EPM 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.

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