CIVIL ENGINEERING

Program Information
The civil engineering program is offered through the Department of Civil and Coastal Engineering with the following degrees:

- Doctor of Philosophy
- Master of Engineering
- Master of Science

The master’s degree in civil engineering is also offered through the Electronic Delivery of Graduate Engineering (EDGE) program, which is a distance learning program delivered either via streaming video or DVD directly to the students. Subject to approval by the supervisory committee, graduate-level courses taken through the College of Engineering (EGN), Departments of Environmental Engineering Sciences, Geological Sciences, and Mechanical and Aerospace Engineering are considered as major credit.

For courses taken through the Department of Civil and Coastal Engineering, credit hours graded S/U will not count toward graduation except for:

- 6 hours of CGN 6971 Research for Master’s Thesis (1-15 cr.) or EOC 6971 Research for Master’s Thesis (1-15 cr.) for thesis students
- 3 hours of CGN 6974 Master of Engineering or Engineer Degree Report (1-6 cr.) for students working on the M.E. report
- CGN 7979 Advanced Research (1-12 cr.) or EOC 7979 Advanced Research (1-12 cr.)
- CGN 7980 Research for Doctoral Dissertation (1-15 cr.) or EOC 7980 Research for Doctoral Dissertation (1-15 cr.)

The department offers a combined bachelor’s/master’s degree program for current UF undergraduate students who intend to complete a graduate degree at UF. Please contact the undergraduate coordinator for information.

Degrees Offered

Degrees Offered with a Major in Civil Engineering

- Doctor of Philosophy
  - without a concentration
  - concentration in Geographic Information Systems
  - concentration in Hydrologic Sciences
  - concentration in Wetland Sciences
- Master of Engineering
  - without a concentration
  - concentration in Geographic Information Systems
  - concentration in Hydrologic Sciences
  - concentration in Structural Engineering
  - concentration in Wetland Sciences
- Master of Science
  - without a concentration
  - concentration in Geographic Information Systems
  - concentration in Hydrologic Sciences

Requirements for these degrees are given in the Graduate Degrees (http://catalog.ufl.edu/graduate/degrees/) section of this catalog.

Courses

Hydrology / Water Resources Shared Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CGN 6905</td>
<td>Special Problems in Civil Engineering</td>
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<tr>
<td>CWR 5125</td>
<td>Groundwater Flow I</td>
<td>3</td>
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<tr>
<td>CWR 5127</td>
<td>Evaluation of Groundwater Quality</td>
<td>3</td>
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<tr>
<td>CWR 5235</td>
<td>Open Channel Hydraulics</td>
<td>3</td>
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<td>CWR 6115</td>
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<tr>
<td>CWR 6126</td>
<td>Variable-Density Groundwater Flow</td>
<td>3</td>
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<tr>
<td>CWR 6525</td>
<td>Groundwater Flow II</td>
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<tr>
<td>CWR 6537</td>
<td>Contaminant Subsurface Hydrology</td>
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<tr>
<td>EGM 5816</td>
<td>Intermediate Fluid Dynamics</td>
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<tr>
<td>ENV 5518</td>
<td>Field Methods in Environmental Hydrology</td>
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<td>ENV 5555</td>
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<tr>
<td>ENV 6052</td>
<td>Immiscible Fluids in Porous Media</td>
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<td>ENV 6441</td>
<td>Water Resources Planning and Management</td>
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<td>ENV 6508</td>
<td>Wetland Hydrology</td>
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<td>ENV 6932</td>
<td>Special Problems in Environmental Engineering</td>
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Civil and Coastal Engineering

Departmental Courses

<table>
<thead>
<tr>
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<tr>
<td>CCE 5035</td>
<td>Construction Planning and Scheduling</td>
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<tr>
<td>CCE 5405</td>
<td>Construction Equipment and Procedures</td>
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<td>CCE 6016</td>
<td>Advanced Engineering Cost Estimating</td>
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<td>CCE 6037</td>
<td>Civil Engineering Operations I</td>
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<td>CEG 5105</td>
<td>Geotechnical Engineer</td>
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<td>CEG 5114</td>
<td>Advanced Geotechnical Aspects of Landfill Design</td>
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<tr>
<td>CEG 5115</td>
<td>Foundation Design</td>
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<td>CEG 5205C</td>
<td>Insitu Measurement of Soil Properties</td>
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<td>CEG 5805</td>
<td>Ground Modification Design</td>
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<td>CEG 6015</td>
<td>Advanced Soil Mechanics</td>
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<td>CEG 6116</td>
<td>Advanced Shallow Foundation Design</td>
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<td>CEG 6117</td>
<td>Advanced Deep Foundation Design</td>
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<td>CEG 6405</td>
<td>Seepage in Soils</td>
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<td>CEG 6505</td>
<td>Numerical Methods of Geomechanics</td>
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<tr>
<td>CEG 6515</td>
<td>Earth Retaining Systems and Slope Stability</td>
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<tr>
<td>CES 5010</td>
<td>Probabilistic and Stochastic Methods in Civil</td>
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<tr>
<td>CES 5116</td>
<td>Finite Elements in Civil Engineering</td>
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<td>CES 5325</td>
<td>Design of Highway Bridges</td>
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<td>CES 5506</td>
<td>Topics in Steel Design</td>
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<td>CES 5607</td>
<td>Behavior of Steel Structures</td>
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<td>CES 5715</td>
<td>Prestressed Concrete</td>
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<td>CES 5801</td>
<td>Design and Construction in Timber</td>
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<td>CES 5835</td>
<td>Design of Reinforced Masonry Structures</td>
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<td>CES 6106</td>
<td>Advanced Structural Analysis</td>
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<tr>
<td>CES 6108</td>
<td>Structural Dynamics</td>
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<tr>
<td>CES 6551</td>
<td>Design of Folded Plates and Shells</td>
<td>3</td>
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<tr>
<td>CES 6571</td>
<td>Design of Temporary Structures</td>
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CEE 6585 Wind Engineering 3
CEE 6588 Protective Structures 3
CEE 6590 Impact Engineering 3
CEE 6591 Applied Protective Structures 3
CEE 6592 Retrofit Protective Structures 3
CEE 6593 Advanced Protective Structures 3
CEE 6706 Advanced Reinforced Concrete 3
CGN 5125 Legal Aspects of Civil Engineering 3
CGN 5605 Public Works Planning 3
CGN 5606 Public Works Management 3
CGN 5715 Experimentation and Instrumentation in Civil Engineering Materials Research 3
CGN 6150 Engineering Project Management 3
CGN 6155 Civil Engineering Practice I 3
CGN 6156 Construction Engineering II 3
CGN 6505 Properties, Design and Control of Concrete 3
CGN 6506 Bituminous Materials 3
CGN 6525 Sustainable Materials 3
CGN 6905 Special Problems in Civil Engineering 1-6
CGN 6910 Supervised Research 1-5
CGN 6936 Civil Engineering Graduate Seminar 1
CGN 6940 Supervised Teaching 1-5
CGN 6971 Research for Master’s Thesis 1-15
CGN 6974 Master of Engineering or Engineer Degree Report 1-6
CGN 7979 Advanced Research 1-12
CGN 7980 Research for Doctoral Dissertation 1-15
CWR 5125 Groundwater Flow I 3
CWR 5127 Evaluation of Groundwater Quality 3
CWR 5235 Open Channel Hydraulics 3
CWR 6116 Advanced Surface Hydrology 3
CWR 6126 Variable-Density Groundwater Flow 3
CWR 6240 Mixing and Transport in Turbulent Flow 3
CWR 6255 Groundwater Flow II 3
CWR 6537 Contaminant Subsurface Hydrology 3
EGM 5816 Intermediate Fluid Dynamics 3
EGN 5949 Practicum/Internship/Cooperative Work Experience 1-6
EGN 6640 Entrepreneurship for Engineers 3
EGN 6642 Engineering Innovation 3
EGN 6913 Engineering Graduate Research 0-3
EGN 6933 Special Topics 1-3
EGN 6937 Engineering Fellowship Preparation 0-1
EGS 6039 Engineering Leadership 3
EGS 6101 Divergent Thinking 3
EGS 6626 Fundamentals of Engineering Project Management 3
EGS 6628 Advanced Practices in Engineering Project Management 3
EGS 6681 Advanced Engineering Leadership 3
EMA 6581 Polymeric Biomaterials 3
ESI 6900 Principles of Engineering Practice 1-4

**College of Engineering Courses**

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<tr>
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<th>Credits</th>
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<td>EEE 5354L</td>
<td>Semiconductor Device Fabrication Laboratory</td>
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<tr>
<td>EGN 5010L</td>
<td>NRF Training Lab</td>
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<tr>
<td>EGN 5949</td>
<td>Practicum/Internship/Cooperative Work Experience</td>
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<tr>
<td>EGN 6640</td>
<td>Entrepreneurship for Engineers</td>
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<td>EGN 6642</td>
<td>Engineering Innovation</td>
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<td>EGN 6913</td>
<td>Engineering Graduate Research</td>
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<td>EGN 6933</td>
<td>Special Topics</td>
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<td>EGN 6937</td>
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<td>Principles of Engineering Practice</td>
<td>1-4</td>
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</table>

**Student Learning Outcomes**

**Civil Engineering (phd)**

**SLO 1 Knowledge**
An ability to critically read engineering literature in the student’s graduate program area (Civil Engineering Materials, Water Resources, Geotechnical Engineering, Construction, Structures, and Transportation); and an ability to identify, formulate new solutions to engineering problems in the student’s program area.

**SLO 2 Skills**
An ability to develop new techniques, skills, and modern engineering tools necessary for engineering practice at an advanced level in the students program area (Civil Engineering Materials, Water Resources, Geotechnical Engineering, Construction, Structures, and Transportation).

**SLO 3 Professional Behavior**
Effectively communicate technical knowledge and information.

**Civil Engineering (ME & MS)**

**SLO 1 Knowledge**
An ability to identify, formulate and solve engineering problems in the student’s program area (Civil Engineering Materials, Water Resources, Geotechnical Engineering, Construction, Structures, and Transportation).
SLO 2  Skills  An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice at an advanced level in the student's program area (Civil Engineering Materials, Water Resources, Geotechnical Engineering, Construction, Structures, and Transportation)

SLO 3  Professional Behavior  Effectively communicate technical knowledge and information