

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 combination 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

- with a concentration in Structural Engineering
- concentration in Wetland Sciences

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

Courses

Hydrology / Water Resources Shared Courses

Code	Title	Credits
CGN 6905	Special Problems in Civil Engineering	1-6
CWR 5125	Groundwater Flow I	3
CWR 5127	Evaluation of Groundwater Quality	3
CWR 5235	Open Channel Hydraulics	3
CWR 6537	Contaminant Subsurface Hydrology	3
EGM 5816	Intermediate Fluid Dynamics	3
ENV 5518	Field Methods in Environmental Hydrology	3
ENV 6052		3
ENV 6441	Water Resources Planning and Management	3
ENV 6508	Wetland Hydrology	3
ENV 6932	Special Problems in Environmental Engineering	1-4

Civil and Coastal Engineering Departmental Courses

Code	Title	Credits
CCE 5035	Construction Planning and Scheduling	3
CCE 6016	Advanced Engineering Cost Estimating	3
CCE 6037	Civil Engineering Operations I	3
CCE 6515C	Engineering and Construction Analytics using BIM	3
CEG 5105	Geotechnical Engineer	3
CEG 5114	Advanced Geotechnical Aspects of Landfill Design	3
CEG 5115	Foundation Design	3
CEG 5205C	Insitu Measurement of Soil Properties	3
CEG 5805	Ground Modification Design	2
CEG 6015	Advanced Soil Mechanics	3
CEG 6116	Advanced Shallow Foundation Design	3
CEG 6117	Advanced Deep Foundation Design	3
CEG 6206	Nondestructive Testing and Geophysical Methods	3
CEG 6405	Seepage in Soils	3
CEG 6515	Earth Retaining Systems and Slope Stability	3
CES 5010	Probabilistic and Stochastic Methods in Civil Engineering	3
CES 5116	Finite Elements in Civil Engineering	3
CES 5325	Design of Highway Bridges	3
CES 5607	Behavior of Steel Structures	3
CES 5715	Prestressed Concrete	3
CES 5801	Design and Construction in Timber	3
CES 6106	Advanced Structural Analysis	3
CES 6108	Structural Dynamics	3
CES 6117	Advanced Finite Element Analysis in Civil Engineering	3
CES 6164C	Structural Health Monitoring	3
CES 6165	Concrete Structural Rehabilitation	3
CES 6585	Wind Engineering	3
CES 6588	Protective Structures	3

CES 6590	Impact Engineering	3
CES 6591	Applied Protective Structures	3
CES 6592	Retrofit Protective Structures	3
CES 6593	Advanced Protective Structures	3
CES 6706	Advanced Reinforced Concrete	3
CGN 5605	Public Works Planning	3
CGN 5606	Public Works Management	3
CGN 6425	Applied Data Science in Civil and Environmental Engineering	3
CGN 6504	Concrete Durability	3
CGN 6505	Properties, Design and Control of Concrete	3
CGN 6506	Bituminous Materials	3
CGN 6525	Sustainable Materials	3
CGN 6877C	Nondestructive Evaluation of Civil Infrastructure	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 6240	Mixing and Transport in Turbulent Flow	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 6913	Engineering Graduate Research	0-3
EOC 5860	Port and Harbor Engineering	3
EOC 6085	Field Methods for Coastal Engineers	3
EOC 6116	Nearshore Coastal Processes	3
EOC 6196	Littoral Processes	3
EOC 6430	Coastal Structures	3
EOC 6850	Numerical Simulation Techniques in Coastal and Ocean Engineering	3
EOC 6905	Individual Study in Coastal and Oceanographic Engineering	1-4
EOC 6934	Advanced Topics in Coastal and Oceanographic Engineering	1-6
EOC 6939	Graduate Seminar	1
EOC 6971	Research for Master's Thesis	1-15
EOC 7979	Advanced Research	1-12
EOC 7980	Research for Doctoral Dissertation	1-15
OCP 6050	Physical Oceanography	3
OCP 6165	Ocean Waves I: Linear Theory	3
OCP 6167	Ocean Waves II: Nonlinear Theory	3
OCP 6168	Data Analysis Techniques for Coastal and Ocean Engineers	3
OCP 6298	Coastal Sediment Transport Processes	3
OCP 6605	Estuarine Circulation	3
TTE 5006	Advanced Urban Transportation Planning	3
TTE 5256	Traffic Engineering	3
TTE 5305	Advanced Transportation Systems Analysis	3
TTE 5805	Geometric Design of Transportation Facilities	3
TTE 5837	Pavement Management Systems	3

TTE 6008	Fundamentals of the Transportation Profession	3
TTE 6205	Freeway Operations and Simulation	3
TTE 6207	Advanced Highway Capacity Analysis	3
TTE 6259	Urban Streets Simulation and Control	3
TTE 6267	Traffic Flow Theory	3
TTE 6275	Connected & Automated Vehicles	3
TTE 6306	Computational Methods in Transportation Engineering	3
TTE 6315	Highway Safety Analysis	3
TTE 6505	Discrete Choice Analysis	3
TTE 6605	Smart Multimodal Transportation Systems	3
TTE 6606	Urban Transportation Models	3
TTE 6615	Electric, Shared, and Micro Mobility	3

College of Engineering Courses

Code	Title	Credits
EEE 5354L	Semiconductor Device Fabrication Laboratory	3
EEE 5776	Applied Machine Learning	3
EEE 6778	Applied Machine Learning II	3
EGN 5215	Machine Learning Applications in Civil Engineering	3
EGN 5216	Machine Learning for Artificial Intelligence Systems	3
EGN 5442	Programming for Applied Data Science	3
EGN 6216	Artificial Intelligence Systems	3
EGN 6217	Applied Deep Learning	3
EGN 6446	Mathematical Foundations for Applied Data Science	3
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 6012	Research Methods in Engineering Education	3
EGS 6020	Research Design in Engineering Education	3
EGS 6039	Engineering Leadership	3
EGS 6050	Foundations in Engineering Education	3
EGS 6051	Instructional Design in Engineering Education	3
EGS 6054	Cognition, Learning, and Pedagogy in Engineering Education	3
EGS 6056	Learning and Teaching in Engineering	1
EGS 6085	Advanced Engineering Educational Technology	3
EGS 6101	Divergent Thinking	3
EGS 6626	Fundamentals of Engineering Project Management	3
EGS 6628	Advanced Practices in Engineering Project Management	3
EGS 6629	Agile Project Management for Engineers and Scientists	3
EGS 6681	Advanced Engineering Leadership	3
EGS 6930	Engineering Education Seminar	1
EGS 6940	Preparation for Engineering Education Practicum	1
EGS 6949	Research to Practice Experience in Engineering Education	1-3
EGS 6971	Research for Master's Thesis	1-12
EGS 7979	Advanced Research	1-12

EGS 7980	Research for Doctoral Dissertation	1-12
ESI 6900	Principles of Engineering Practice	1-4

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