

CIVIL AND COASTAL ENGINEERING

Course Search

Not all courses are offered every semester. Refer to the schedule of courses for each term's specific offerings.

[More Info](#)

Courses at the University of Florida, with the exception of specific foreign language courses and courses in the online Master of Arts in Mass Communication program, are taught in English.

Courses

- CCE 4015 Civil Engineering Estimating** **3 Credits**
Design of systems for estimating and cost control of man-machine productivity for civil engineering projects. Analysis of cost factors required for optimization of engineering-investment efficiency.
Prereq: CCE 4204 and 3EG classification
- CCE 4204 Construction Equipment, Methods and Management** **3 Credits**
Theory and practice of construction operations, equipment utilization and construction methods. Analysis of costs. Optimizing crew and equipment. Heavy equipment costs. New emphasis on planning and executing a construction project.
Prereq: junior or senior standing, or instructor permission
Coreq: CGN 4101
- CCE 4811 Construction Engineering Design** **3 Credits**
Simulation of comprehensive construction project involving all phases of planning, scheduling and control from start to finish, which involves making major decisions. Oral presentation at the end of course.
Prereq: CCE 4204, CGN 4102 and CES 4034
- CEG 4011 Soil Mechanics** **4 Credits**
Physical properties of soils, compaction, flow of water through soil, distribution of stress within soil and consolidation. Laboratory.
Prereq: EGM 3520
- CEG 4012 Geotechnical Engineering** **3 Credits**
Subsurface exploration settlements analysis, slope stability, earth pressure and an introduction to foundation design.
Prereq: CEG 4011
- CEG 4104 Retaining Wall and Embankment Design** **3 Credits**
The application of soil mechanics to the design and analysis of various types of retaining structures and earthen embankments.
Prereq: CEG 4012
- CEG 4111 Foundation Engineering Design** **3 Credits**
Comprehensive design of geotechnical system, focusing on design of complete project and utilizing CAD programs. Designs, drawings and oral presentations through group effort.
Prereq: CEG 4012
- CES 3102 Mechanics of Engineering Structures** **4 Credits**
Introduces structural load, equilibrium, shear and bending moment diagrams, structural analysis software, classical methods for displacement determination, method of consistent deformations, slope deflection method, moment distribution method.
Prereq: EGM 3520
- CES 4141 Matrix Structural Analysis** **3 Credits**
Determining structural loads, solving matrix equations, direct stiffness method, formulation of element matrices, transformations, modeling realistic frame and truss systems, introduces the finite element method, determining convergence, interpretation of results, model validation.
Prereq: CES 3102 and CGN 3421
- CES 4605 Analysis and Design in Steel** **3 Credits**
Elastic and plastic theories of design, design of members subjected to tension, compression, flexure and torsion. Design of connections and rigid frames.
Prereq: CES 3102 and CGN 3501
- CES 4608 Advanced Steel Design** **3 Credits**
Advanced topics in the design of steel structural building systems, advanced column and beam design, base plate design, moment amplification, second-order analysis, bracing considerations, beam-columns, interaction equations, connection design, composite design, plate girders.
Prereq: CES 4605 and EG classification
- CES 4702 Analysis and Design in Reinforced Concrete** **3 Credits**
Ultimate strength analysis and design of reinforced beams and columns, working stress design for flexure, design of footings and retaining walls.
Prereq: CES 3102 and CGN 3501C
- CES 4704 Advanced Reinforced Concrete Design** **3 Credits**
Advanced topics in the design of concrete building systems. Long columns and frames, floor and roof systems, including two-way slabs, continuous beams, spandrel beams, torsion, foundations, introduces pre-stressed concrete.
Prereq: CES 4702 and EG classification
- CGN 2002 Introduction to Civil Engineering** **1 Credit**
Introduces beginning students to the broad field of civil engineering.
- CGN 2328 Technical Drawing and Visualization** **3 Credits**
Two- and three-dimensional graphical methods of visualizing and communicating features of projects for construction involving parcel boundaries, topography, drainage, site modeling, site development, structures, buildings and objects using both traditional and computer-aided drafting and design techniques.
Prereq: minimum 2EG classification
- CGN 3421 Computer Methods in Civil Engineering** **3 Credits**
Review of computer programming. Numerical methods as applied to civil engineering problems and civil engineering software.
- CGN 3501C Civil Engineering Materials** **4 Credits**
Studies the principal materials used for engineering purposes with special attention to mechanical properties and their importance to the engineer. Hands-on experience in testing of civil engineering materials.
Coreq: EGM 3520
- CGN 3510 Introduction to Sustainable Engineering** **3 Credits**
Overview of the principles of sustainability as they relate to civil and environmental engineering issues. Discussions and projects facilitate a basic understanding of the production-consumption model and life cycle assessment.
Prereq: EG standing
- CGN 3710 Experimentation and Instrumentation in Civil Engineering** **3 Credits**
Fundamentals and applications of measuring systems commonly used in civil engineering. Topics include recording techniques, strain, force, displacement, flow, temperature, humidity and PH measurements.
Prereq: PHY 2049

CGN 4101 Civil Engineering Cost Analysis	3 Credits	CWR 4120 Groundwater	3 Credits
Analysis of civil engineering proposals, utilizing time-value and related factors. Feasibility and optimum life comparisons. Utility rate derivation, utility/cost method.		Introduces groundwater hydraulics, including hydrologic cycle, Darcy's equation, Dupuit assumption, well hydraulics, regional flow, freshwater-saltwater interface, flow in the unsaturated zone, fate and transport of contaminants and contaminant plume model.	
Prereq: 3EG classification or instructor permission		Prereq: CWR 4202	
CGN 4160 Civil Engineering Practice	3 Credits	CWR 4202 Hydraulics	3 Credits
Fundamentals of civil engineering professional practice: project management, construction delivery processes, business concepts, public policy, administration and leadership.		Fundamental equations for pipe and open conduit flow. Development of design oriented formulas for pipes and open channels. Introduces hydrology.	
Prereq: EGM2511 or equivalent		Prereq: CWR 3201 or instructor permission	
Coreq: CGN 2328		CWR 4306 Urban Stormwater Systems Design	3 Credits
CGN 4503 Pavement Design	3 Credits	Surface-water system design including: time of concentration, peak runoff rate, open-channel flow, gravity storm sewer, culvert, stormwater pumping, filtration systems, hydrograph generation, flood routing, site layout, site grading and permitting.	
Function and material requirements of different elements of flexible and rigid pavement systems; characterization of soils, materials, traffic loads, and environment for design; flexible and rigid pavement design; new developments.		Coreq: CWR 4202	
Prereq: CGN 3501C		CWR 4542 Water Resources Engineering	3 Credits
CGN 4600 Public Works Engineering and Management Practices	3 Credits	Study of water resources engineering applications including hydrology and statistics, groundwater, hydraulic machinery, dams and reservoirs, water quality, water quality modeling, water and waste-water treatment and water law and institutions.	
Public works profession, organization, administration and management of operating divisions with emphasis on role of engineer.		Prereq: CWR 4202	
CGN 4806 Transportation-Water-Materials Design	3 Credits	EGN 4912 Engineering Directed Independent Research	3 Credits
Simulation of a design project experience through the completion and presentation of a comprehensive roadway project design. Students work in multi-disciplinary groups to complete a system design that includes traffic, materials, hydrologic and geotechnical considerations.		Provides firsthand, supervised research with a faculty advisor or postdoctoral or graduate student mentor. Projects may involve inquiry, design, investigation, scholarship, discovery or application. (S-U)	
Prereq: senior standing		EGS 1005 Prep for Success	1-4 Credits
CGN 4905 Special Problems in Civil Engineering	1-4 Credits	Freshman success course that includes academic preparation in calculus, chemistry, student success and technical communications. (S-U)	
Selected problems or projects in the student's major field of engineering study.		Prereq: EG student	
Prereq: undergraduate coordinator permission		ENV 4514C Water and Wastewater Treatment	3 Credits
CGN 4910 Structures-Geotechnical-Construction Comprehensive System Design	3 Credits	Design of water and wastewater treatment units.	
Simulation of a design office experience through the completion and presentation of a comprehensive building design. Students work in multi-disciplinary groups to complete a system design that includes structural, geotechnical and construction management considerations.		OCE 3016 Introduction to Coastal and Oceanographic Engineering	3 Credits
Prereq: instructor permission		Introduces important coastal and oceanographic processes. Geophysical fluid motions; waves and tides; air-sea interaction; pollutant transport; coastal hydraulic and sedimentary processes. Not intended for engineering majors.	
CGN 4949 Co-op Work Experience	1 Credit	TTE 4004C Transportation Engineering	4 Credits
Co-op work experience in a related field. (S-U)		Overview of the significance of highway transportation to the social and economic underpinnings of society. Introduces road vehicle performance, geometric design of highways, traffic flow and queuing theory, highway capacity and level of service analysis, traffic control and analysis at signalized intersections, and travel demand and traffic forecasting.	
Prereq: EG classification		Prereq: 3EG classification	
CWR 3201 Hydrodynamics	4 Credits	TTE 4106 Urban Transportation Planning	3 Credits
Classification and properties of fluids, hydrostatics, and conservation of mass, momentum and energy in fluid flow. Potential flow, similitude and physical modeling. Laminar and turbulent pipe flow. Introduces turbomachines.		Overview of the four-step urban transportation planning process; includes analytical techniques for estimating future travel demand and state-of-the-art approaches.	
Prereq: EGM 3400 and MAP 2302		Prereq: TTE 4004C	
CWR 4114 Surface Hydrology	3 Credits	TTE 4201 Traffic Engineering	3 Credits
Occurrence and distribution of water by natural processes, including atmospheric thermodynamics, precipitation, runoff, infiltration, water losses, flood routing and catchment characteristics, analysis and methods of runoff prediction.		General review of the fundamentals of traffic engineering with emphasis on field studies and data analysis.	
Prereq: CWR 4202		Prereq: TTE 4004C	

TTE 4203 Highway Capacity Analysis 3 Credits

Provide students with detailed instruction on the procedures defined within the 2010 Highway Capacity Manual (HCM), including analytical chapters for uninterrupted and interrupted flow.

Prereq: TTE 4004C

TTE 4300 Transportation Systems Analysis 3 Credits

Systems analysis in transportation planning and engineering, including supply, demand, equilibrium, evaluation and decision analysis.

Prereq: TTE 4004C

TTE 4824 Transportation Facility Design 3 Credits

Simulates a comprehensive design of a transportation facility, specifically an arterial-freeway interchange. Utilizes state and national-level design manuals in preparation of standard plans. Applies the theoretical background gained in supporting classes, in areas such as traffic analysis, roadway design, roadway drainage and pavement design. Some review of this material is provided, as well as introduction of several new concepts. Emphasizes teamwork skills and technical communication skills.

Prereq: SUR 4201 and TTE 4004C
