CONSTRUCTION ENGINEERING (CONE)

CONE 816 Wood and / or Contemporary Materials Design
Crosslisted with: CONE 416
Prerequisites: CIVE 341
Description: Design of structural timber, beams, columns, and connections. Introduction to applicable design philosophies and codes. Overview of materials design. Masonry, aluminum, and contemporary materials such as plastics and fiber reinforced systems and composite material groups. Design considerations, cost and constructability analysis.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CONE 817 Formwork Systems
Crosslisted with: CONE 417
Prerequisites: CONE 416; parallel CIVE 441.
Description: Design of structural timber, beams, columns, and connections. Introduction to applicable design philosophies and codes. Overview of materials design. masonry, aluminum, and contemporary materials such as plastics and fiber reinforced systems and composite material groups. Design considerations, cost and constructability analysis.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

CONE 821 Construction Risk Assessment and Management
Prerequisites: STAT 380
Description: The overall process of hazards risk management (risk identification, risk analysis, risk assessment, risk communication), risk based decision making and risk mitigation. Classification of building stock, defining vulnerability, risk assessment methods, assessing economic losses and cost benefit analysis. Case studies will be used to demonstrate the application of risk management principles/techniques in practice.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

CONE 850 Sustainable Construction
Crosslisted with: CONE 450
Prerequisites: Senior standing.
Description: Sustainable construction and its application to the green building industry. LEED certification process, sustainable building site management, efficient waste water applications, optimizing energy performance, indoor environmental issues, performance measurement and/or verification, recycled content and certified renewable materials.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CONE 859 BIM I: Introduction to Building Information Modeling (BIM)
Crosslisted with: CONE 459
Prerequisites: CNST 112 Construction, or Graduate standing in AREN, CIVE, CNST, or CONE.
Description: This course instructs CAD users on the effective use of Building Information Model (BIM) for Integration of design, document and Construction Estimate. Topics include: model-based 3D design, file formats, interoperability, and MEP modeling.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

CONE 866 Heavy and/or Civil Estimating
Crosslisted with: CONE 466
Prerequisites: CONE 319, CONE 378, and CONE 485.
Description: Estimating techniques and strategies for heavy and/or civil construction. Unit pricing, head and civil constructions takeoffs and estimating, equipment analysis, overhead cost and allocations, estimating software and government contracts.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CONE 881 Highway and Bridge Construction
Crosslisted with: CONE 481
Prerequisites: Senior standing; CNST 241.
Description: The methods and equipment required in the construction of roads and bridges. Methods and equipment necessary for roads and bridges. Substructure and superstructures, precast and cast-in-place segments, and standard and specialized equipment.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CONE 882 Heavy and/or Civil Construction
Crosslisted with: CNST 482, CNST 882, CONE 482
Prerequisites: CNST 379
Notes: Not open to non-degree graduate students
Description: History, theory, methods, and management principles of planning and executing heavy and/or civil projects. Emerging and new equipment capabilities. Economical use of equipment and management of costs associated with production.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CONE 883 Support of Excavation
Crosslisted with: CONE 483
Prerequisites: Senior standing.
Description: The design and placement of excavation supports according to OSHA requirements and industry standards. A variety of routine to moderately complex support systems. Open excavations, heet piling and cofferdams, soil mechanics, lateral loads, hydrology, and pumping methods.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CONE 885 Construction Planning, Scheduling, and Controls
Crosslisted with: CNST 485, CONE 485, CNST 885
Prerequisites: CNST 378
Notes: Not open to non-degree graduate students
Description: Planning and scheduling a project using the critical path methods (CPM) with computer applications. Project pre-planning, logic networks, precedence diagrams, time estimates, critical path, float time, crash programs, scheduling, short interval schedules, pull planning, and monitoring project activities.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded
Prerequisite for: CNST 489; CONE 489

CONE 895 Graduate Internship
Crosslisted with: CNST 895
Prerequisites: Open only to Construction Management graduate students.
Description: Participation in a full-time summer internship with an approved Construction Engineering or Construction Management related entity. Includes weekly assignments and a final presentation that are designed to create interaction between the Construction entity and the intern, and associated with the business aspects of the entity. General topics include Business Plans, Marketing, Finance and Budgets, Contracts, Legal Issues and Professionalism.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded
Offered: SUMMER

CONE 898 Special Topics in Construction Engineering
Prerequisites: Master of engineering in construction or related discipline and permission
Description: A signed student-instructor learning contract is required. Individual or small group investigation of special topics in construction engineering. Topic varies.
Credit Hours: 1-6
Min credits per semester: 1
Max credits per semester: 6
Max credits per degree: 6
Grading Option: Graded

CONE 993 Graduate Seminar
Crosslisted with: CNST 993
Prerequisites: Graduate student in Construction Program
Notes: All MS and PhD graduate students in Construction Engineering and Management (CEMT) must enroll in their first semester of matriculation. P/NP only for 1 hour credit maximum. Attendance of a minimum of 15 Durham School Graduate Student Seminars, CEMT project presentations, and/or MS/PhD thesis presentations in the College of Engineering is required. Presentation of one seminar within the Durham School Graduate Student Seminar series, prior to the final graduate degree oral examination, is also required.
Description: Seminar participation to broaden knowledge of construction engineering and management topics, improve presentation and professional skills, and learn about professional development resources available on campus.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Grading Option: Pass No-Pass

CONE 999 Doctoral Dissertation
Prerequisites: Admission to the Doctor of Philosophy in Engineering degree program and permission of the major advisor
Credit Hours: 1-21
Min credits per semester: 1
Max credits per semester: 21
Max credits per degree: 21
Grading Option: Grade Pass/No Pass Option