CONSTRUCTION MANAGEMENT (CNST)

CNST 811 Project Administration
Crosslisted with: CNST 411
Prerequisites: Junior or senior standing
Notes: Not open to non-degree graduate students
Description: Ownership and administration of companies focusing on documentation and specifications, contracts, take-offs, estimating, bidding, bonds, insurance, project management and administration, scheduling, time and cost management, labor law and labor relations, and project safety.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CNST 815 Mechanical/Electrical Project Management
Crosslisted with: CNST 415
Prerequisites: CNST 305, CNST 306, CNST 379
Notes: CNST 405 and CNST 406 are recommended.
Description: Fundamentals of project management within the mechanical and electrical contracting industry. Codes, contract documents, productivity, coordination, project control and administration, scheduling, safety, and project closeout, from a specialty contracting perspective.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CNST 820 Professional Practice and Ethics
Crosslisted with: CNST 420
Prerequisites: CNST 378
Notes: Not open to non-degree graduate students
Description: Examination of professional practice considering the perspectives of designers and the contractors and their respective relationships to society, specific client types, and other collaborators in the design and construction fields. Focus on ethics, professional communication and responsibility, professional organization, office management, environmental stewardship, professional registration, and owner-designer-contractor relationships.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

CNST 825 Alternative Project Delivery Methods
Crosslisted with: CNST 425
Prerequisites: CNST 379
Notes: Not open to non-degree graduate students
Description: Historical and current project delivery methods (PDM) are explored. Procurement strategies, contractual arrangements, and compensation methods are also discussed in conjunction with risks, costs, and legal and ethical issues that need to be considered when determining which system is best for a particular project.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded
Offered: SPRING

CNST 826 Occupational Health and Safety for Construction
Prerequisites: Permission
Description: Investigation of occupational health and safety hazards in the construction environment. Accident causation and illness exposure models, construction safety and health programs and contract requirements, project safety and health management, special problems in construction safety, OSHA/EPD/ADA regulation and compliance issues, health assessment and monitoring, safe building methods design, toxic substance exposures, abatement methods, and worker training and protection.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CNST 834 The Design-Build Project Delivery System
Crosslisted with: CNST 434
Prerequisites: CNST 378
Notes: Not open to non-degree graduate students
Description: The organizational, managerial, ethical and legal principles involved in design-build as a project delivery system. Advantages and disadvantages, growth, merits, and criticism of the design-build system.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded
Experiential Learning: Research

CNST 836 Intent and Application of International Building Code
Crosslisted with: CNST 436
Prerequisites: CNST 379
Notes: Not open to non-degree graduate students
Description: Fundamentals of how to research, interpret, and apply building code requirements to the design and construction of both new and renovated structures.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

CNST 842 Healthcare Design and Construction
Crosslisted with: AREN 442, AREN 842, CNST 442
Prerequisites: Senior or graduate standing
Description: Introduction to the design and construction of healthcare facilities. Healthcare regulations and standards, infection control, interim life safety measures, code requirements, medical equipment selection and coordination, healthcare design and construction techniques, and best practices will be addressed. Provides guidance in preparation for the Certified Healthcare Constructor credential offered by the American Healthcare Association.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CNST 844 Construction Site Safety Management
Crosslisted with: CNST 444
Prerequisites: CNST 241 or CONE 319
Notes: Satisfactory completion will partially qualify the individual to be designated by their employer as a construction site "competent person" by successfully completing the OSHA 30-hour Construction Safety Card as well as additional certifications in basic first aid, CPR, and AED. Not open to non-degree graduate students
Description: Introduction to safety management for project engineers, project managers, safety teams, and company safety officers. Addresses basic accident and injury models, human accident costs, safety behavior, ethical issues in safety, workers' compensation and EMR, job safety analysis (JSA), project site safety audits, safety promotion and training, emergency planning and response, safety management programs and training, and OSHA record-keeping and reporting.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Offered: FALL
Experiential Learning: Case/Project-Based Learning

CNST 850 Sustainable Construction
Prerequisites: Graduate standing in ARCH, CET, CIVE, or CNST
Description: Application of Leadership in Energy and Environmental Design (LEED) best practices in building procurement and delivery systems. History, theory, and state-of-the-art practices in designing and constructing green buildings. Basic principles required to make the multitude of decisions when designing or constructing a green building. LEED construction practices (emerging practices that are economical, produce esthetically pleasing structures, and are environmentally sound).
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CNST 860 Construction Visualization and Simulation
Prerequisites: Graduate standing in construction management or related discipline with instructor approval
Description: Fundamental knowledge of visualization platforms of buildings and construction. Topics include construction visualization software, basic data structure and programming, interoperability, and building performance simulation.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

CNST 880 Productivity and Human Factors in Construction
Crosslisted with: CNST 480
Prerequisites: Corequisite CNST 489, senior standing
Notes: Not open to non-degree graduate students
Description: Motivation and productivity improvement methods for management in typical job environments. Methods to improve working environments in the field and office. Procedures and mechanisms to implement human behavior and ergonomics concepts for enhanced productivity and safety.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option
Prerequisite for: CNST 489
Experiential Learning: Case/Project-Based Learning

CNST 882 Heavy and/or Civil Construction
Crosslisted with: CNST 482, CONE 482, CONE 882
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

CNST 885 Construction Planning, Scheduling, and Controls
Crosslisted with: CNST 485, CONE 485, CONE 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

CNST 886 Construction Management Systems
Crosslisted with: CNST 486
Prerequisites: CNST 379
Notes: Not open to non-degree graduate students.
Description: Application of selected topics in systems analysis (operations research). Simulation, mathematical optimization, queuing theory, Markov decision processes, econometric modeling, neural networks, data envelopment analysis, decision analysis, and analytic hierarchy processes as used in the industry.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

CNST 887 Construction Leadership and Strategic Planning
Prerequisites: Permission
Description: New models of construction leadership for the 21st Century. Application of transformational leadership to strategic planning and marketing in construction contracting. Leadership and strategic problem solving constructs and methods.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CNST 888 Residential Construction and Real Estate
Crosslisted with: CNST 488
Prerequisites: CNST 379
Description: Application of various strategies to real estate development including community and residential design, planning, site selection, land development, marketing and customer service. Methods used by construction companies to analyze, bid, and market their developments to customers through the pre-construction and bidding process.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Graded

CNST 890 Masters Project
Prerequisites: Admission to the master of engineering degree program with an emphasis in construction, and permission
Description: Technical report, technical paper, or portfolio project, culminating in a final document and oral presentation.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

CNST 895 Graduate Internship
Crosslisted with: CONE 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

CNST 898 Special Topics in Construction Management
Crosslisted with: CNST 498
Prerequisites: Permission.
Notes: A signed student-instructor learning contract is required.
Description: Individual or small group investigation of topics in construction management.
Credit Hours: 1-6
Min credits per semester: 1
Max credits per semester: 6
Max credits per degree: 6
Grading Option: Graded

CNST 899 Masters Thesis
Prerequisites: Admission to masters degree program
Credit Hours: 1-10
Min credits per semester: 1
Max credits per semester: 10
Max credits per degree: 10
Grading Option: Grade Pass/No Pass Option

CNST 991 Thesis and Dissertation Methods for Construction Research
Prerequisites: Graduate standing in AREN, CET, CIVE, CNST, or CONE
Description: A structured approach to thesis and dissertation methods, conducting a literature review, choosing appropriate analytical methods, and writing and presenting a construction research project. Seminar course.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Grading Option: Grade Pass/No Pass Option

CNST 993 Graduate Seminar
Crosslisted with: CONE 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

CNST 999 Doctoral Dissertation
Prerequisites: Admission to doctoral degree program and permission of supervisory committee chair.
Credit Hours: 1-24
Min credits per semester: 1
Max credits per semester: 24
Max credits per degree: 99
Grading Option: Grade Pass/No Pass Option