

CONSTRUCTION MANAGEMENT (CNST)

CNST 811 Project Administration

Crosslisted with: CNST 411

Prerequisites: CNST 379

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 379 and BLAW 300

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 379

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

CNST 835 Design/Build: Methods and Application

Prerequisites: Permission

Description: Investigation, documentation, and application of current Design/Build processes and methodology used in commercial construction. Principles and practices of Design/Build as a project delivery system.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded

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 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

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 858 Construction Information Management Systems

Prerequisites: Graduate standing in construction management or related discipline with instructor approval

Description: Fundamental knowledge of construction information management systems. Construction project management software will be used including database design.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Grade Pass/No Pass Option

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 879 Construction Management and Construction Systems

Prerequisites: Permission

Description: Quantity survey methods, production rate and cost analysis, bidding, contingency and risk analysis. Computer applications of estimating and research topics. Monte Carlo simulation, Virtual 3D, BIM applications relevant to construction estimating and risk analysis.

Credit Hours: 3

Max credits per semester: 3

Max credits per degree: 3

Grading Option: Graded

CNST 880 Productivity and Human Factors in Construction

Crosslisted with: CNST 480

Prerequisites: CNST 379, MNGT 300

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

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 883 Management of Limited Scope Permitting

Prerequisites: Graduate standing in ARCH, CET, CIVE, or CNST

Description: Building code permitting process associated with all projects. Phased projects that require one or more limited scope permits prior to receiving the final full construction permit. How to improve coordination and reduce the confusion and risk associated with managing the permitting process. The permitting process that is applicable to both large and small projects and that can be easily adapted and used in all jurisdictions throughout the United States.

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**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:** Masters of engineering in construction or related discipline.**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 936 Advanced Topics in Intent and Application of the International Building Code****Prerequisites:** Graduate standing in Construction Management or by instructor permission**Description:** In-depth analysis of research methodology, interpretation and application of building code requirements associated with 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 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.

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