

CONSTRUCTION ENGINEERING-CONE (CONE)

CONE 103 Virtual Design and Construction I Credits: 3 (2-2-0)

Course Description: Fundamentals of 2D and 3D modeling and surveying. Introduction to procedures in computer-aided design and computer graphics used in producing plans and three-dimensional electronic models associated with building design and construction. Basic techniques of land and construction surveying, including measurement of position, elevation, orientation and length of lines, area, volume, and layout calculations.

Prerequisite: None.

Registration Information: Must register for lecture and laboratory.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

CONE 192 Seminar in Construction Engineering Credit: 1 (0-0-1)

Course Description: Introduction to the construction engineering major, career paths, industry sectors, campus resources, and tools for academic success. Explores differences in career paths for construction engineering, construction management, and civil engineering.

Prerequisite: None.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

CONE 201 Construction Systems and Decision Analysis Credits: 3 (3-0-0)

Course Description: Engineering economics, numerical and decision analysis techniques, applications of risk analysis (e.g. decision tree analyses); includes probability and statistics.

Prerequisite: MATH 161.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

CONE 203 Virtual Design and Construction II Credits: 3 (3-0-0)

Course Description: Three-dimensional modeling of the built environment, including aspects of Construction Specifications Institute's (CSI) Division 1-14, and design coordination across multiple trades. Utilization of automated quantity takeoffs.

Prerequisite: CONE 103.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

CONE 301 Engineering Contracts Credit: 1 (1-0-0)

Course Description: Contracts used in the architecture, engineering, and construction industry, key contract clauses, stakeholder responsibilities, effective contract administration, and ethical considerations.

Prerequisite: CONE 203.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

CONE 302 Preconstruction and Project Control Systems Credits: 5 (3-4-0)

Course Description: An overview of preconstruction scheduling and estimating for building and engineering projects. An exploration of project management methods and engineering problem solving. Integration of computer applications for complex scope, cost, and scheduling challenges.

Prerequisite: CONE 301.

Registration Information: Must register for lecture and laboratory.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

CONE 401 Construction Safety Engineering Credits: 3 (3-0-0)

Course Description: Effective health and safety management systems in the context of a safety culture, including hazard anticipation, fault tree analysis, and the leading indicators of jobsite accidents.

Prerequisite: CONE 192.

Restriction: Must not be a: Freshman, Sophomore.

Registration Information: Junior standing. Written consent of advisor.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

CONE 402 Senior Project Design I Credits: 3 (3-0-0)

Course Description: Design of construction and civil engineering systems involving simulated real-world design and construction planning experience in a team-based environment.

Prerequisite: CONE 302 and CONE 487.

Restriction: Must not be a: Freshman, Sophomore.

Registration Information: Junior standing.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

CONE 403 Senior Project Design II Credits: 3 (3-0-0)

Course Description: Design of construction engineering systems with nontechnical and economic design considerations, project organization, design project development, and presentation.

Prerequisite: None.

Restriction: Must not be a: Freshman, Sophomore.

Registration Information: Junior standing.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

CONE 404 Production Planning of Construction Operation Credits: 3 (3-0-0)

Course Description: An examination of field productivity analyses, modeling of construction operations, critical lift planning, crane stability, equipment production estimation, production of blasting operations, and deep foundation installation.

Prerequisite: CIVE 360 and CONE 201.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

CONE 405 Virtual Design and Construction III Credits: 3 (3-0-0)

Course Description: Advanced information systems used to control and predict project performance (cost and schedule) in construction. Topics include the use and implementation of Building Information Modeling as a systems approach for integrating design and construction, 4D simulations, clash detection, application of AR/VR, and integration of 3D imaging data.

Prerequisite: CONE 203 and CONE 404.

Terms Offered: Fall, Summer.

Grade Mode: Traditional.

Special Course Fee: No.

CONE 410 Environmental Systems in Construction Credits: 3 (3-0-0)

Course Description: Systems utilized in construction to protect the environment: storm water collection and drainage, storm characteristics, runoff analyses, detention/retention ponds, and sustainability approaches used in construction. Utilizes a case study approach to examine successful and unsuccessful approaches to preserving the environment during construction operations.

Prerequisite: CIVE 322 and CONE 404.

Registration Information: Written consent of instructor.

Terms Offered: Fall, Spring.

Grade Mode: Traditional.

Special Course Fee: No.

CONE 487 Construction Engineering Internship Credit: 1 (0-0-3)

Course Description: Integrate and apply construction engineering competencies through practical on-the-job training and exposure with an organization performing construction-related services. Interns demonstrate competency through professional practice of knowledge, skills, and abilities related to construction engineering.

Prerequisite: CONE 401.

Registration Information: Written consent of instructor.

Terms Offered: Fall, Spring, Summer.

Grade Mode: Traditional.

Special Course Fee: No.