Construction Engineering Courses

CONE 221 - Building Construction I
Hours: 3
A study of the construction materials and methods used in commercial building projects. Students will examine the selection, acquisition, and utilization of concrete, steel, masonry and wood in a variety of building projects. The course will include introduction to blueprint reading, quantity takeoff, mechanical and electrical systems of building projects. Prerequisites: ENGR 2303 with a minimum grade of C.

CONE 321 - Construction Estimating
Hours: 3
Study of the principles and application of construction estimating including quantity takeoff, pricing of materials, classification of work, labor, overhead, specifications, bid procedures, and project scheduling. Students will be introduced to computerized estimating and scheduling software. Prerequisites: CONE 221 with a minimum grade of C and ENGR 2308 with a minimum grade of C.

CONE 322 - Construction Planning and Scheduling
Hours: 3
A study of planning and scheduling of time, costs, and other resources for a construction project. Computerized scheduling software will be introduced. Prerequisites: CONE 321 with a minimum grade of C.

CONE 324 - Building Construction II
Hours: 3
This course is designed to equip students with a comprehensive understanding of technology and its practical application in the construction industry. Throughout this course, students will engage in hands-on experiences with Building Information Modeling (BIM) software tools, mastering the creation of 3D models, efficient project management, and effective collaboration among project stakeholders. Students will have the chance to explore the tangible application of BIM in real-world construction projects. Students will demonstrate how these digital technologies enhance both the efficiency and precision of construction projects. Prerequisites: CONE 221 with a minimum grade of C.

CONE 331 - Mechanics of Materials
Hours: 3
Applications of conservation principles and stress/deformation relationships for continuous media to structural members; axially loaded members; thin-walled pressure vessels; torsional and flexural members; shear; moment; deflection of members; combined loadings; stability of columns; nonsymmetrical bending, shear center; indeterminate members; elastic foundations. Prerequisites: CONE 221 with a minimum grade of C.

CONE 332 - Structural Analysis and Design
Hours: 3
Functions of structure, design loads, reactions and force systems; analysis of statically determinate structures including beams, trusses and arches; energy methods of determining deflections of structures; influence lines and criteria for moving loads; analysis of statically indeterminate structures including continuous beams and frames. Prerequisites: CONE 331 with a minimum grade of C.

CONE 341 - Engineering Hydrology & Hydraulics
Hours: 3
Design of water distribution systems and open channels; selection of pumps and turbines; hydraulics of wells; basic engineering hydrology including precipitation, infiltration, runoff, flood routing, fluid flow in pipe, statistical measures and water resources planning. Prerequisites: CONE 331 with a minimum grade of C.

CONE 351 - Surveying for Construction
Hours: 3
Surveying techniques and procedures used in engineering projects. Surveying instruments, topographic maps, building site layout, route surveying, precision, significant figures, errors, and closure. Prerequisites: ENGR 1304 with a minimum grade of C.

CONE 413 - Design and Construction of Steel Structures
Hours: 3
Design and construction of steel structures including tension members, compression members, flexural members, and connections utilizing the building codes. Prerequisites: CONE 414 with a minimum of C.

CONE 414 - Design and Construction of Concrete Structures
Hours: 3
Design and construction of concrete structures including reinforced concrete beams, slabs, columns, walls and footings utilizing the building codes Prerequisites: CONE 332 with a minimum grade of C.

CONE 423 - Contracts & Specifications
Hours: 3
This course will examine the legal and contractual aspects of construction, types of construction contracts, contractual relationships among different parties, construction administration, construction insurance, concepts in value engineering, professional ethics, and construction safety issues. Prerequisites: CONE 322.

CONE 424 - Construction Accounting and Financial Management
Hours: 3
Students will have an integrated overview of finance, costs, revenues, and expenditures at the construction company and project level. Prerequisites: CONE 324 with a minimum grade of C.

CONE 432 - Design and Construction of Foundations
Hours: 3
Determination of civil engineering properties of soil and their behavior, identification, grain size analysis, compaction, permeability, consolidation, and shear strength. Attention is given to foundation system selection, design, and construction methods Prerequisites: CONE 414 with a minimum grade of C.

CONE 433 - Construction Project Controls
Hours: 3
This course is designed to equip students with a comprehensive understanding of technology and its practical application in the construction industry. Throughout this course: 1. Students will engage in hands-on experiences with Building Information Modeling (BIM) software tools, mastering the creation of 3D models, efficient project management, and effective collaboration among project stakeholders. 2. Students will have the chance to explore the tangible application of BIM in real-world construction projects. 3. Students will demonstrate how these digital technologies enhance both the efficiency and precision of construction projects. Prerequisites: CONE 322- Construction Planning and Scheduling with a minimum grade of C.

CONE 441 - Highway and Heavy Construction
Hours: 3
Highway planning, driver characteristics, geometric design, traffic flow and control, highway materials, pavement design, and how highways are constructed, maintained, and upgraded. Students will apply the knowledge of estimating and scheduling to heavy construction projects such as highways, bridges, approaches, pipelines, or related structures. Prerequisites: CONE 322 with a minimum grade of C and CONE 332 with a minimum grade of C.

CONE 470 - Preparation for Construction Engineering Capstone Project
Hours: 3
All phases of the capstone project are developed as a team, including preliminary engineering design process, construction constraints, interaction with clients, identification of engineering problems, developments of proposal, identification of design criteria, cost estimating, planning and scheduling, application of codes and standards, development of alternatives and selection of best alternative. All deliverables are identified. Prerequisites: CONE 322 with a minimum grade of C and CONE 332 with a minimum grade of C.

CONE 471 - Construction Engineering Capstone Project
Hours: 3
Application of team design concepts to the capstone project Prerequisites: CONE 470 with a minimum grade of C.

CONE 489 - Independent Study
Hours: 1-4
Individualized instruction/research at an advance level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies.

CONE 490 - H Honor Thesis
Hours: 3
Honors Thesis. Three semester hours.

CONE 491 - H Ind Honors Reading
Hours: 3
Individual Honors Reading.