

# Construction Engineering Courses

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## **CONE 221 - Building Construction**

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 and ENGR 2308.

## **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.

## **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: ENGR 2303 and CONE 221.

## **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.

## **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.

## **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: MATH 315 or MATH 2320.

## **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: ENGR 411.

**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.

**CONE 433 - Construction Project Controls**

Hours: 3

This course includes an integrated process that deals with the resources, procedures, and tools to manage the cost, schedule, and risks associated with construction projects. Prerequisites: CONE 322 Construction Planning and Scheduling.

**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 and CONE 332.

**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 and CONE 332.

**CONE 471 - Construction Engineering Capstone Project**

Hours: 3

Application of team design concepts to the capstone project Prerequisites: CONE 470.

**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.