

# CIVIL ENGINEERING TECHNOLOGY (CET)

## CET 1220 – Construction Materials

### 3 Credit hours

Covers soil types as well as the determination of strength and load bearing capacities. Methods for and reasons to determine optimum soil moisture contents will be covered. Techniques for field and laboratory identification of soils and for soil compaction and tests of liquid and plastic limit will be taught. The types and kinds of aggregate materials to include slag, gravel, and limestone will be studied. Crush counts as it relates to strength will also be covered. Types of gradation and density as it relates to compaction of stone will be taught. The quality of aggregate materials.

## CET 1450 – Concrete Technology I

### 4 Credit hours

Provides an introductory understanding of base materials such as stone, gravel, sand, water, types of cement, and ASTM type additives A through F. In addition, air entrainment agents as well as Pozzlanic type additives such as nylon, polypropylene, and still will also be covered. Construction quality of building: (a) foundations, (b) walls, (c) frames, and (d) floors will be covered. In addition, construction of bridge foundations, sub- and superstructures, and architecturally designed concrete slabs and concrete pavements will be addressed. Joint construction, vibration considerations of concrete, texture and smoothness, placement of reinforcements, drainage considerations (edge drains), and segregation of the mix will also be covered. Balancing material production with trucking and placement will be taught. Types of equipment plant to finished work will be included as well as the effects of climatic conditions on construction.

**Prerequisites:** CET 1220.

## CET 1910 – OSHA 10-hr General Safety

### 1 Credit hour

Provides entry level general awareness for recognizing and preventing hazards in a general industry setting. Upon successful completion of this course, participants will receive an OSHA 10-hr General Industry completion card.

## CET 1921 – ACI Strength Testing Technician

### 2 Credit hours

Demonstrates concrete strength certification procedures including the knowledge and the ability to perform, record and report the strength results as well as the capping of concrete cylinders, unbounded capping, compressive strength and flexural strength of concrete test specimens.

## CET 1990 – Independent Study in CET

### 1 Credit hour

Incorporates in-depth work on a special topic within the field of Civil Engineering Technology which the student was not able to pursue in the desired degree of depth in the regular course offerings. During the first week of the semester, the student is required to describe the proposed course of study in writing that he/she wishes to pursue. Such proposal must be submitted to the division dean for approval and student assignment to a Civil Engineering Technology faculty member for overseeing the project.

## CET 2200 – Structural Design

### 3 Credit hours

Covers the concepts of structural design as it applies to wood and steel structures such as residential and light commercial structures. Topics that will be covered include: fundamental concepts of stress analysis, analysis of coplanar statically determinate and indeterminate trusses; bending deformation; analysis of statically indeterminate coplanar frames; load analysis and fundamentals of structural connections. The use of LRFD steel manual will also be explored to select structural beams.

**Prerequisites:** PHY 1120, MTH 1370.

## CET 2210 – Pavement Analysis

### 3 Credit hours

Introduces AASHTO equations as they relate to pavement design as well as how to compute axle loads as it relates to design and pavement thickness. The Ohio Department of Transportation, Portland Cement Association, and the Asphalt Institute's design criteria will also be taught. Life cycle cost concepts and computerized design aids will be introduced. Materials, environment, subgrade strength, and traffic will be covered as basic concepts to design of rigid and flexible pavements.

**Prerequisites:** MTH 1210, CET 1220.

## CET 2220 – Surveying Fundamentals

### 3 Credit hours

Learn the techniques and procedures utilized to locate, measure, and check the construction components for both new and existing buildings. Development of hands-on skills using the tools and equipment in simulated construction application exercises. Utilization of contract documents as sources of information for layout of projects as well as the documentation of techniques used to record field activities.

## CET 2230 – Construction Cost and Analysis

### 3 Credit hours

Covers the determination of time, labor, and materials needed to complete a job. Determination of indirect costs and their relationship to direct costs will be covered as well as assignment of distributions of overhead. Also covered will be the determination of equipment depreciation. Unique bidding parameters such as A and B bidding, Incentive/Disincentive, and Warranties will be included as well as life cycle cost comparisons for designers and value engineering for design changes.

**Prerequisites:** CET 2210, MTH 1210.

## CET 2450 – Concrete Technology II

### 4 Credit hours

Covers specifications from ACI and ASTM for mix design and field testing of concrete. Specifically, the course will cover testing of fresh concrete, concrete materials, compiling and evaluating test results, and assessing product performance. Proper procedures for making and curing specimens will be covered in addition to field testing of fresh concrete to determine temperature, slump, yield and air content. Emphasis will be placed on batch adjustments and the knowledge needed to become ACI Certified as a Field Testing Technician - Grade I.

**CET 2970 – Civil Engineering Technology Capstone**  

**2 Credit hours**

Allows students to demonstrate their proficiency by integrating technical knowledge with core skills and abilities. This course is designed to combine all of the material presented thus far and relate it to a real life engineering design and construction experience. The students will be presented a design and construction task and be required to complete the project on a scheduled time-line. Relevant content will be a collection of topics including aggregate material & soils data, concrete mix designs, material and additives, concrete field and lab testing, topography surveying, pavement analysis & design (rigid & flexible), computer drafting and estimating. Each project will have a final oral presentation showing the students communication skills including the use of PowerPoint in the presentation. By design, this is a capstone course so no new material will be presented in this class. The course will include an e-portfolio assignment and an exit evaluation of critical thinking and writing.

**Prerequisites:** CET 1220, CET 1450, CET 2210, COM 1110.

**CET 2991 – Field Experience**

**1 Credit hour**

Enables work activity which relates to an individual student's occupational objectives. With permission of a faculty advisor, the field experience replaces elective or required courses in a student's associate degree program. The experience is coordinated by a faculty member of the college who assists the student in planning the experience, visits the site of the experience for a conference with the student and his/her supervisor at least once during the semester and assigns the course grade to the student after appropriate consultation with the employer/supervisor. This course is graded S/U.