Farmingdale State College
State University of New York

CONSTRUCTION MANAGEMENT ENGINEERING TECHNOLOGY - BS

WHAT IS THE BACHELOR OF SCIENCE IN CONSTRUCTION MANAGEMENT ENGINEERING TECHNOLOGY?

The Construction Management Engineering Technology program is designed to respond to the need for skilled professionals possessing the level of sophistication necessary to accommodate state-of-the-art technology which has impacted the construction industry. It incorporates extensive use of the computer in the technical specialty together with upper level mathematics, economics, and communications.

The Construction Management Engineering Technology program encompasses study in traditional engineering technology offerings (Statics, Strength of Materials, Structural Design Materials Testing, etc.) The program is complemented with offerings in project control, scheduling, cost control, quality control, construction productivity, and economics. It prepares students for employment in an emerging occupation within the construction industry. Graduates will possess expertise in construction and specialized administrative skills commensurate with the requirements dictated by the industry to coordinate and execute the construction of the design created by the engineer and the architect.

This program is accredited by the Accreditation Director for Engineering Technology, Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, MD 21202 (410) 347-7700.

CURRICULUM SUMMARY

Degree Type: ..... BS
Total Required Credits: 130

Admission Requirements
Mathematics: 2 Units of Defined Math
Science: 1 Unit of Laboratory Science

For additional information:
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School of Engineering Technologies
Dean's Office: 631-420-2256
Office of Admissions: 631-420-2200

Admission to Farmingdale State College - State University of New York is based on the qualifications of the applicant without regard to age, sex, marital or military status, race, color, creed, religion, national origin, disability or sexual orientation.

PROGRAM OF STUDY

Liberal Arts & Sciences (64 credits)

MTH 129 Pre Calculus with Applications..... 39
MTH 130 Calculus with Applications 4
MTH 236 Calculus II with Applications 3
MTH Electives 6
Science Elective 3
EGL 209 Technical Communications 3
ECO 321 Engineering Economics 3
Arts/Science/Modern Language Elective 3

Construction Management courses (66 credits)

CON 103 Surveying 3
CON 111 Graphics 2
CON 161 Materials & Methods of Construction I.....3
CON 101 Introduction to Technology & Applied Programming 2
CON 121 Graphics II.....2
CON 162 Materials & Methods of Construction II 3
CON 106 Statics.....3
CON 207 Elements of Strength of Materials.....3
ARC 263 Mechanical, Electrical, Plumbing & Energy Systems in Buildings 3
CON xxx Technical Elective I (Lower level) 3
CON xxx Technical Elective II (Lower level) 3
CON xxx Technical Elective 3
CON 356 Estimating Fundamentals for Residential & Commercial Const. 3
CON 301 Construction Methods & Equipment.....3
CON 302 Soils, Foundations & Earth Structures 3
CON 303 Hydraulics.....3
CON 401 Construction Project Mgmt. & Sched 3
CON 402 Civil Engineering Materials.....3
CON 403 Structures I (Analysis & Concrete) 3
CON 404 Structures II (Steel & Wood) 3
CON 406 Advanced Project Planning & Scheduling.3
ARC 363 Site Planning & Design 3
CON 496 Capstone Project.....3

Total Credits: 130

ARC 263 Mechanical, Electrical, Plumbing and Energy Systems in Buildings

An overview of mechanical, electrical and plumbing (MEP) aspects of buildings. Intended to develop students' ability to analyze energy requirements of buildings and various methods of energy conservation and thermal efficiency. Topics covered include heat flow, system and equipment for heating and cooling. Also included are water supply and wastewater treatments for buildings.

Prerequisite: CON 162

(3,0) 3 credits

ARC 363 Site Planning & Design

An advanced course in utilization of engineering and architectural principles from the concept through the construction techniques of site development. Computer aided programs in site design and survey data management will be introduced. Drainage, soil stabilization and erosion control parameters, and design techniques are applied to site designs. Safety and geometric standards for roadway design and construction are incorporated into the course.

Prerequisite: CON 103

(2, 2) 3 credits

CON 101 Introduction to Technology & Applied Programming

A survey of technological concepts, terminology and a brief review of mathematical concepts. This course introduces concepts of vector and its applications. It introduces handson programming and its applications, and reviews problem solving techniques with technological applications.

(1,2) 2 credits *Fall*

CON 103 Surveying

The development of skills in the use of the basic surveying instruments- tape, level, transit. Trigonometric and differential leveling and cross-sectioning. Azimuth, bearing and angle determination by repetition procedures. Angular closures. Stadia and stadia reduction of inclined sights, topographic mapping by transit stadia and plan table methods.

(2,3) 3 credits *Fall, Spring*

CON 106 Statics

A basic course in Statics the main objective course is to provide basic understanding of the principles of statics. Topics such as resultant of a force, equilibrium of forces, moments, couples, analysis of simple trusses, centroids, center of gravity, moments of inertia and friction are covered in this course. *Students completing this course cannot also receive credit for MET 201.*

Prerequisite: MTH 129

(2,2) 3 credits *Spring*

CON 111 Graphics I

To develop student's abilities in lettering, technical sketching, drafting and the use of drafting instruments. The fundamentals of orthographic projection and pictorial drawings develop the student's abilities to visualize and describe objects and structures graphically.

(1,2) 2 credits *Fall, Spring*

CON 121 Graphics II

Introduction to Computer Aided Drafting (CAD) for architectural and construction drawing. Topics include: commands and drawing strategies for 2-D and 3-D CAD work; architectural plans, sections, elevations, and details; information management; assembly of drawings and scales; and descriptive geometry.

Prerequisite: CON 111 and Computer Competency

(1,2) 2 credits *Fall, Spring*

CON 161 Materials & Methods of Construction I

An introduction to the engineering properties and the uses of construction materials including soils, concrete, masonry, steel and wood. Classroom testing demonstrations of several materials are included. Conventional construction systems are studied. Orientation to the construction industry, associated professions, and the varieties of employment available.

(3,0) 3 credits *Fall, Spring*

CON 162 Materials & Methods of Construction II

A continuation of CON 161 extended to include the study of architectural properties of selected materials, methods of construction, and building components. Class work includes technical problem solving using quantitative and graphic analysis of specific building construction systems.

Prerequisite: CON 161

(3,0) 3 credits *Spring*

CON 207 Elements of Strength of Materials

Introduces the concepts of stress, strain, bending and shear stresses, torsion and deflection of beams including elasticity, shear and moment diagrams for beams, moment of inertia of unsymmetrical sections, and thermal and combined stresses. Discussed are centroids, center of gravity and moments of inertia. Columns are also covered. Several related laboratory experiments are performed.

Prerequisite: CON 106 or MET 201

(2,2) 3 credits *Fall*

CON 301 Construction Methods & Equipment

This course covers Methods & equipment used in heavy, commercial and residential construction. It includes earth moving excavating, loading and hauling, rock excavation, compressed air and water systems, paving, and some selected topics from building construction.

Prerequisite: CON 162 or equivalent.

(3,0) 3 credits *Fall*

CON 302 Soils, Foundations & Earth Structure

This course introduces soil mechanics, foundation and earth structure to the engineering technology students. It includes soil classification, soil properties, soil stresses, earth pressures, bearing capacity, slope stability. It also discusses principles of foundation analysis and design, retaining walls, etc. Laboratory experiments to test behavior of soils included.

Prerequisite: CON 207 or equivalent.

(2,2) 3 credits *Spring*

CON 303 Hydraulics

This course provides a broad understanding of the basic principles of engineering hydraulics and hydrology. The emphasis is on application of the theories. It involves basic principle of hydraulics, flow in closed conduits, flow in open channels, hydraulic structures, principles of hydrology, groundwater hydraulics, and related laboratory experiments. Computer application included.

Prerequisites: CON 207 or equivalent, PHY 136 and one semester of calculus.

(2,2) 3 credits *Spring*

CON 356 Estimating Fundamentals for Residential & Commercial Construction

This course focuses on fundamentals of residential and commercial construction estimating. Topics covered range from site work, forms, concrete, metals and masonry to plumbing and electricity. Also covered are wood framing and steel framing. Fundamentals of computer assisted estimating are introduced.

Prerequisite: CON 162

(3,0) 3 credits *Spring*

CON 401 Construction Project Management & Scheduling

This course gives an in-depth introduction and orientation to construction project management. This includes professional construction management in practice and methods in professional construction management. Some of the areas this course will cover are: Bidding and Award, Application of Controls, Scheduling, Planning and Control of Operations and Resources, Procurement Quality Assurance, Safety and Health in Construction, Industrial Relations. Computer Applications included.

Prerequisite: CON 162 or equivalent.

(3,0) 3 credits *Fall*

CON 402 Civil Engineering Materials

This course covers a study of the materials used for Civil Engineering construction purposes. The materials to be studied are concrete, steel, asphalt and wood. The physical parameters which contribute to material performance are studied. Appropriate laboratory tests are included. Documents from the American Concrete Institute and the American Society of Testing material will be used.

Prerequisite: CON 162 or equivalent.

(2,2) 3 credits *Fall*

CON 403 Structures I (Analysis & Concrete)

This course introduces fundamentals of structural analysis for beams, trusses, frames, etc. It includes statically determinate as well as indeterminate structures. This course also introduces fundamentals of reinforced concrete design including strength design for beams, columns, footings, and two way slabs. Computer application included.

Prerequisite: CON 207 or equivalent.

(3,0) 3 credits *Fall*

CON 404 Structures II (Steel & Wood)

This course introduces fundamentals of structural steel design. This includes design of tension members, compression members, beams, columns, and various connections. This course also teaches the basic principles of wood design, which includes formwork design and frame construction. Computer application is included.

Prerequisite: CON 403.

(3,0) 3 credits *Spring*

CON 406 Advanced Project Planning & Scheduling

Topics include introduction to advanced project planning concepts and terminology, development of schedule activities and preparing and maintaining computerize schedules. Introduction to BIM.

Prerequisite: CON 401w

(3,0) 3 credits

CON 496 Capstone Project

This is a capstone course. It utilizes skills and knowledge acquired in various courses in the curriculum and general education courses to produce a realistic life project. In this course students follow a faculty driven structured process to integrate various components of a project. This course introduces very little new materials, rather it helps the student to synthesize skills and knowledge learned in other courses to apply in real-life situations.

Prerequisite: Departmental Approval, Upper Division status & substantial completion of the program

(2,2) 3 credits *Spring*