

CIVIL ENGINEERING TECHNOLOGY COURSE DESCRIPTIONS:

CMCE 1104/CT 104

Statics & Strength of Materials I

2 cl hrs, 2 cr

This course provides an introduction into the basic theory necessary for structural analysis and design. It emphasizes the use of standard charts and tables in conjunction with a calculator, for the solution of elementary Statics and Strength of Materials problems. The concepts of force, stress, strain and equilibrium are explored in depth. Student projects include the use of a desktop computer programs.

Pre- or corequisite: MA 175

CMCE 1110/CT 110

Construction Drawings

1 cl hr, 2

lab hrs, 2 cr

This course will introduce the student to the basic drafting techniques that are required in the construction field. Students will learn the proper use of drafting equipment. In addition, through actual drawings, the student will develop an understanding of architectural working drawings relating to wood frame residential buildings and commercial buildings and their use in construction projects. Topics will include drafting techniques and equipment, lettering, line work, geometric constructions, site plans, foundation drawings, floor plans, electrical, plumbing and heating/air conditioning plans.

Prerequisite: None

CMCE 1152/CV 152

Surveying

1 cl hr, 4 lab hrs, 3

cr

This course enables students to perform actual surveying work using traditional surveying equipment. Fundamental theory of plane surveying, surveying procedures including measurements of distances, elevations and direction are studied. Principles and use of field equipment, including tapes, levels, transits, theodolites and electronic distance meters (EDM), field and office work, including traverses, topographic surveys and mapping, construction surveys, earthwork computations, stadia, note-keeping and office calculations. Computer applications for traverse computations will be covered as well as an introduction to CAD.

Pre- or corequisites: MA 275, CMCE 1110/CT 110

CMCE 1204/CT 204

Statics and Strength of Materials II

3 cl hr, 3

cr

This course is a continuation of CT104, and provides additional theory necessary for structural analysis and design. Engineering concepts for shear and bending moment diagrams, section properties, beam analysis and truss analysis are explored in depth. Student projects include the use of a desktop computer for the solution of beam analysis, section properties, and trusses.

Prerequisite: CMCE 1104/CT 104

CMCE 2252/CV 252

Route Surveying

1 cl hr, 4 lab hrs, 3

cr

Theory and practice of route surveying, including horizontal curves, vertical curves, spirals, earthwork, profiles and mapping are covered in this course. Advanced surveying projects in field and office, including computer applications are covered.

Prerequisite: CMCE 1152/CV 152

CMCE 1255/CV 255

Computer Applications in Civil Engineering Technology

2 cl hrs, 2

lab hrs, 3 cr

This course provides a working knowledge of computers and their application in the fields of Construction and Civil Engineering. Topics include microcomputer systems and attendant hardware, computer terminology, disk operating system (DOS & Windows), word processing programs such as Word, spreadsheets such as Excel and presentation software such as Powerpoint. Visual basic is also introduced in this course. The student will learn how to use these tools to manage construction projects, prepare estimates, work proposals and to present oral presentations. Each topic assignment is based on a specific construction management or civil engineering topic.

Pre- or corequisites: MA 275, CMCE 1104/CT 104, certification in reading and writing

CMCE 2306/CT 306

Materials Testing Laboratory

1 cl hr, 2 lab hrs, 2

cr

This course will explore the mechanical properties of steel, timber and concrete through laboratory testing. Standard tension, compression, shear, torsion, ductility and bending tests are performed in accordance with ASTM standards. Principles of field inspection of fresh concrete are covered as well. Students are given the opportunity to earn certification by the American Concrete Institute as "Field Inspectors, Level 1, of Fresh Concrete."

Pre- or corequisites: CMCE 2315/CT 315 or CMCE 2415/CT 415, certification in reading and writing

CMCE 2315/CT 315

Elements of Structural Design—Steel

3 cl hrs, 3

cr

This course provides a working knowledge of the basic concepts encountered in the analysis and design of structural steel elements. The American Institute of Steel Construction (AISC) specifications for the design, fabrication and erection of structural steel for buildings are studied particularly as they apply to the design of beams, columns and connections. Analysis methods and procedures are developed for solving practical problems encountered in civil engineering. Students will learn to use the charts, tables, design aids and specifications available for simple structural design, which are contained in the "AISC Steel Handbook". Student projects include the use of a desktop computer.

Prerequisite: CMCE 1204/CT 204; Note: Students should not register for both CT315 and CT415 simultaneously without departmental approval.

CMCE 2351/CV 351

Hydraulics

3 cl hrs, 3 cr (fall only)

Fundamentals of hydraulics for civil engineering technicians including properties of fluids, fluid statics, manometers, forces on submerged plane and curved surfaces, buoyancy, principles of fluid flow, flow measurements, nozzles, Venturi meters, head losses. Use of a desktop computer, including commercial and non-commercial software as well as standard nomographs for solving hydraulic problems are utilized in this course.

Pre- or corequisites: MA 375, SC 433

CMCE 2352/CV 352

Soil Mechanics (Laboratory)

2 cl hrs 3 lab hrs, 3

cr

This course combines soil theory, field practice and lab procedures. The student will learn the origin and nature of soils, soil classifications, sampling, soil properties, strength characteristics, soil water relationships, settlement & consolidation concepts, lateral earth pressure and subsurface stresses. Methods and procedures are developed for solving practical soil mechanics type problems encountered in civil engineering projects. Laboratory tests, related calculations and computer applications are all incorporated into this course.

Pre- or corequisites: CMCE 1204/CT 204, MA 375, SC 433

CMCE 2415/CT 415

Elements of Structural Design—Concrete

3 cl hrs, 3 cr

This course provides a working knowledge of the basic concepts encountered in the analysis and design of reinforced concrete elements. The Building Code Requirements for Reinforced Concrete (ACI latest edition) is studied as it applies to the design and analysis of concrete beams, slabs, columns and footings for buildings. Analysis methods and procedures are developed for solving practical problems encountered in civil engineering. Students will learn to use tables and select design aids for simple structural designs. Basic detailing and inspection criteria are also introduced. Student projects include the use of a desktop computer.

Prerequisite: CMCE 1204/CT 204; Note: Students should not register for both CT315 and CT415 simultaneously without departmental approval

CMCE 2452/CV 452

Civil Engineering Drawing (AUTOCAD)

1 cl hr, 3

lab hrs, 2 cr

This course provides the students with a working knowledge of Computer Aided Drafting. Through the use of structural drawings for steel, wood and concrete, students build on their basic knowledge of both civil engineering and construction drawing principles and standards. Methods and procedures are developed for solving practical drafting problems encountered in construction projects using Computer Aided Drafting methods. Students will learn the sequence of commands and/or steps required to start, create, save and plot CAD drawings. Improved skills are also developed in the reading and interpretation of typical working drawings from civil engineering and construction projects.

Prerequisites: CMCE 1110/CT 110, CMCE 1252/CV 252; pre- or corequisite: CMCE 2315/CT 315 or CMCE 2415/CT 415

CMCE 2454/CV 454

Applied Hydraulics: Water Supply & Sewerage Treatment

2 cl hrs, 2 cr (spring

only)

The student will learn the principles of water supply and sewerage collection and treatment, with an emphasis on NYC's water supply and sewerage treatment systems. Storm water and sewerage design concepts and theory will be explored as well as elementary hydrology including surface and aquifer systems. Considerations of pipe flow, minor losses, series vs. parallel pipe systems, pumping systems as well as open channel flow will be covered.
Prerequisites: CMCE 2351/CV 351, MA 375

CMCE 2455/CV 455

Materials & Methods of Construction

2 cl hrs, 2 cr

Construction materials and methods used in building construction of all public works facilities. Also covered are office and field practices involved in such projects. Current materials, methods and practices of construction using NYC Building and Zoning codes, as well as A.A.S.H.T.O. codes as reference are covered. Introduction to the basic principles of construction management, including the design and construction process, scheduling and contracts.

Prerequisite: CMCE 1252/CV 252

CONSTRUCTION MANAGEMENT COURSE DESCRIPTIONS:

CMCE 1104/CT 104

Statics & Strength of Materials I

2 cl hrs, 2

cr

This course provides an introduction into the basic theory necessary for structural analysis and design. It emphasizes the use of standard charts and tables in conjunction with a calculator, for the solution of elementary Statics and Strength of Materials problems. The concepts of force, stress, strain and equilibrium are explored in depth. Student projects include the use of a desktop computer programs.

Pre- or corequisite: MA 175

CMCE 1110/CT 110

Construction Drawings

1 cl hr, 2

lab hrs, 2 cr

This course will introduce the student to the basic drafting techniques that are required in the construction field. Students will learn the proper use of drafting equipment. In addition, through actual drawings, the student will develop an understanding of architectural working drawings relating to wood frame residential buildings and commercial buildings and their use in construction projects. Topics will include drafting techniques and equipment, lettering, line work, geometric constructions, site plans, foundation drawings, floor plans, electrical, plumbing and heating/air conditioning plans.

Prerequisite: None

CMCE 1114/CT 114

Materials & Methods of Construction I

2 cl hr, 3 lab hrs, 3

cr

This course introduces the student to wood and masonry construction and the study of modern building techniques. The student applies the theory through the construction of a scaled detailed project of a residential dwelling. In addition, the student will be introduced to the basic principles of construction management.

Prerequisite: None

CMCE 1204/CT 204

Statics and Strength of Materials II

3 cl hr, 3

cr

This course is a continuation of CT104, and provides additional theory necessary for structural analysis and design. Engineering concepts for shear and bending moment diagrams, section properties, beam analysis and truss analysis are explored in depth. Student projects include the use of a desktop computer for the solution of beam analysis, section properties, and trusses.

Prerequisite: CMCE 1104/CT 104

CMCE 1220/CT 220

Construction Management I

3 cl hrs, 3

cr

This course introduces the student to the basic practice of construction management in the erection and construction of a building project. The course is designed to give the student a thorough understanding of the construction process and the elements that comprise this process leading to a successful completion. Topics covered will include the discussion of the design and construction process, types of contracts, responsibilities of

participating parties, zoning and building codes, specifications and drawings, construction bidding and award of contracts, law and labor relations, risk allocation and liability sharing.

Prerequisites: CMCE 1110/CT 110, CMCE 1114/CT 114, certification in reading and writing

CMCE 1224/CT 224

Materials & Methods of Construction II

1 cl hr, 2

lab hrs, 3 cr

This course provides the student with an understanding of the fundamentals of the three major categories of any building construction project namely the foundation, substructure and superstructure. Current methods and materials of construction are emphasized. Topics will include cast-in-place and precast concrete frame construction, masonry stone construction, steel frame construction, glass and glazing and curtain wall construction systems.

Prerequisites: CMCE 1110/CT 110, CMCE 1114/CT 114, certification in reading and writing

CMCE 2306/CT 306

Materials Testing Laboratory

1 cl hr, 2 lab hrs, 2

cr

This course will explore the mechanical properties of steel, timber and concrete through laboratory testing. Standard tension, compression, shear, torsion, ductility and bending tests are performed in accordance with ASTM standards. Principles of field inspection of fresh concrete are covered as well. Students are given the opportunity to earn certification by the American Concrete Institute as "Field Inspectors, Level 1, of Fresh Concrete."

Pre- or corequisites: CMCE 2315/CT 315 or CMCE 2415/CT 415, certification in reading and writing

CMCE 2315/CT 315

Elements of Structural Design—Steel

3 cl hrs, 3

cr

This course provides a working knowledge of the basic concepts encountered in the analysis and design of structural steel elements. The American Institute of Steel Construction (AISC) specifications for the design, fabrication and erection of structural steel for buildings are studied particularly as they apply to the design of beams, columns and connections. Analysis methods and procedures are developed for solving practical problems encountered in civil engineering. Students will learn to use the charts, tables, design aids and specifications available for simple structural design, which are contained in the "AISC Steel Handbook". Student projects include the use of a desktop computer

Prerequisite: CMCE 1204/CT 204; Note: Students should not register for both CT315 and CT415 simultaneously without departmental approval.

CMCE 2452/CV 452

Civil Engineering Drawing

1 cl hr, 3 lab hrs, 2

cr

This course provides the students with a working knowledge of Computer Aided Drafting. Through the use of structural drawings for steel, wood and concrete, students build on their basic knowledge of both civil engineering and construction drawing principles and standards. Methods and procedures are developed for solving practical drafting problems encountered in construction projects using Computer Aided Drafting methods. Students will learn the sequence of commands and/or steps required to start, create, save and plot CAD drawings. Improved skills are also developed in the reading and interpretation of typical working drawings from civil engineering and construction projects.

Prerequisites: CMCE 1110/CT 110, CMCE 1255/CV 255; pre- or corequisite: CMCE 2315/CT 315 or CMCE 2415/CT 415

CMCE 2320/CT 320

Construction Management II

3 cl hrs, 3

cr

This course introduces the student to site organization and management techniques that are required in construction project management. Students will gain a thorough understanding of all aspects of field supervision and contract administration. Topics will include field office setup, record keeping, reports, meeting minutes, change orders, measurement and payment, quality control, claims and disputes.

Prerequisites: CMCE 1110/CT 110, CMCE 1114/CT 114, CMCE 1220/CT 220

CMCE 2412/CT 412

Construction Estimating

1 cl hr, 3 lab hrs, 2

cr

This course prepares the student to estimate the cost of various types of construction. A detailed material takeoff is made from typical construction documents. Pricing, including the cost of labor, material, equipment,

subcontracts, overhead, contingencies and profit is discussed. Annually updated costs from Means' "Building Construction Cost Data" are used in preparing the cost estimate. Commercial computer software is used in this class.

Prerequisites: CMCE 1220/CT 220, CMCE 1224/CT 224

CMCE 2415/CT 415

Elements of Structural Design—Concrete

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CMCE 2419/CT 419

Building Service Systems

2 cl hrs, 2 cr (spring

only)

Analysis of plumbing, heating, ventilating, air conditioning and electrical equipment appropriate for residential and commercial-industrial buildings are explored. Modern methods and current equipment are emphasized.

Prerequisite: SC 433

CMCE 2420/CT 420

Construction Management III

1 cl hr, 2 lab hrs, 2 cr (spring

only)

This course teaches current practices in preparing project schedules, including bar charts and Critical Path Method (CPM). Emphasis will be placed on using industry standard computer scheduling software.

Prerequisite: CMCE 2320/CT 320

CMCE 2900/CT 900

Construction Management Internship (optional)

3 cr, see Department Chair

CMCE 1152/CV 152

Surveying

1 cl hr, 4 lab hrs, 3

cr

This course enables students to perform actual surveying work using traditional surveying equipment. Fundamental theory of plane surveying, surveying procedures including measurements of distances, elevations and direction are studied. Principles and use of field equipment, including tapes, levels, transits, theodolites and electronic distance meters (EDM), field and office work, including traverses, topographic surveys and mapping, construction surveys, earthwork computations, stadia, note-keeping and office calculations. Computer applications for traverse computations will be covered as well as an introduction to CAD.

Pre- or corequisites: MA 275, CMCE 1110/CT 110

CMCE 1252/CV 252

Route Surveying

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Theory and practice of route surveying, including horizontal curves, vertical curves, spirals, earthwork, profiles and mapping are covered in this course. Advanced surveying projects in field and office, including computer applications are covered.

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CMCE 1255/CV 255

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lab hrs, 3 cr

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CMCE 2351/CV 351**Hydraulics***3 cl hrs, 3 cr (fall**only)*

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Pre- or corequisites: MA 375, SC 433

CMCE 2352/CV 352**Soil Mechanics (Laboratory)***2 cl hrs 3 lab hrs, 3**cr*

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Pre- or corequisites: CMCE 1204/CT 204, MA 375, SC 433

CMCE 2452/CV 452**Civil Engineering Drawing (AUTOCAD)***1 cl hr, 3**lab hrs, 2 cr*

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CMCE 2454/CV 454**Applied Hydraulics: Water Supply & Sewerage Treatment***2 cl hrs, 2 cr (spring**only)*

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Prerequisites: CMCE 2351/CV 351, MA 375

CMCE 2455/CV 455**Materials & Methods of Construction***2 cl hrs, 2**cr*

Construction materials and methods used in building construction of all public works facilities. Also covered are office and field practices involved in such projects. Current materials, methods and practices of construction using NYC Building and Zoning codes, as well as A.A.S.H.T.O. codes as reference are covered. Introduction to the basic principles of construction management, including the design and construction process, scheduling and contracts.

Prerequisite: CMCE 1252/CV 252