

# Department of Construction Management & Civil Engineering Technology

Tel.: 718-260-5575; Fax: 260-5677



## CONSTRUCTION MANAGEMENT TECHNOLOGY



**New York City College of Technology**  
300 Jay Street, Brooklyn, NY 11201  
Tel.: 718-260-5575; Fax: 260-5677  
[www.citytech.cuny.edu](http://www.citytech.cuny.edu)

**THE CITY UNIVERSITY OF NEW YORK**



**CMCE Mission Statement:** The mission of the Department of Construction Management & Civil Engineering Technology at New York City College of Technology is to educate our students for careers in the fields of Construction and Civil Engineering. Our focus is on the fundamental concepts and technical skills required to create a wide range of career paths in the construction and civil engineering profession. We balance practical knowledge with theory. The department will continue its long tradition of educating non-traditional students of diverse backgrounds for successful entry into the construction industry. Through excellence in teaching and community service, the department promotes opportunities for scholarly, personal, and professional growth. The department is also committed to maintaining a diverse faculty of Professional Engineers and Architects. Graduates will be prepared to support the diverse needs of the City of New York.

### Contact Information

#### Professor Anthony Cioffi, P.E. Chairman

186 Jay Street, Voorhees Bldg, Room 432  
(Tel) 718.260.5575 (Fax) 718.260.5577  
email: tcioffi@citytech.cuny.edu



### PROGRAMS

Civil Engineering Technology/A.A.S.  
Construction Management Technology/A.A.S.  
Construction Management/Certificate



### FACULTY & STAFF

Prof. Anthony Cioffi, P.E, Department Chairman  
Ms. Sharda Del Rio, B.T.  
Prof. Sigurd Stegmaier, R.A.  
Ms. Gerarda Shields, P.E.  
Mr. Benito Santiago. CLT

## Associate in Applied Science in CONSTRUCTION MANAGEMENT TECHNOLOGY

The Construction Management Technology program is the only one of its kind in the CUNY system. It prepares students for careers as managers and technicians in the field of construction. All facets of the construction process are studied, including construction materials, methods, management and mechanical systems as well as all elements of design. Both the public and private sectors are studied from the time the project is conceptualized until it is turned over to an owner. The program combines an emphasis on construction management with components of engineering technology.

This degree includes within its core of construction management courses important components of both mathematics and physics to give the entry-level construction manager a variety of technical skills, including an understanding of basic structural analysis and design. Additional technical skills are developed as they relate to building layout (surveying) and materials testing, including training for The American Concrete Institute certification as Field Inspector (Level 1) of Fresh Concrete. The students learn to interpret and read construction drawings through a hands-on approach. All technical courses incorporate computers. There is a separate course in computer-aided drawing. Graduates are prepared for immediate employment in every phase of building technology. Occupational titles include: assistant construction superintendent, assistant estimator, assistant project manager, surveyor, construction inspector, reinforced concrete detailer, structural drafter, structural steel detailer and CAD operator.

Applicants are urged to complete at least one year of academic mathematics in high school to avoid delaying their progress in this curriculum.

## **Bachelor of Technology in Facilities Management**

Students who have successfully completed the requirements for this degree are eligible for transfer into the bachelor of technology in facilities management program with a concentration in Construction Management. For more information, contact Professor Anthony Treglia in the Department of Environmental Control Technology at (718) 260-5160.

### **Employment Opportunities**

The Construction Management Technology Program covers many disciplines offering both technical and practical experience. Graduates readily find employment with construction firms, engineering firms, testing laboratories and industrial organizations.

Despite periodic rises and falls, the long range employment outlook for construction professionals is very favorable, due to the rebuilding of lower Manhattan and the redevelopment of the outer Boroughs of New York City. According to the latest projections of this nation's employment needs, it is estimated that more than one million Engineering Technicians will be required to meet the needs of industry. The Department of Construction/ Management & Civil Engineering Technology maintains strong ties with employers in the industry and takes great pride in its placement activities and success.

Entry salaries start between \$32,000 and \$45,000. Working conditions generally include a 35-40 hour week and paid holidays and vacations. Many firms offer health insurance, hospitalization, and tuition reimbursement for those employees who wish to continue their studies.

Recent graduates of this program have been employed in entry-level construction management positions as well. Government-related agencies and organizations which regularly employ these graduates include: The Dormitory Authority of the State of New York, The Port Authority of New York and New Jersey and The New York City Department of Transportation. Recent employers of the graduates of this program include numerous general contractors, engineering consulting firms and construction management firms such as Arnell Construction Co, Slattery Construction Co, Chas. Sells, Consulting Engineers, Delta Contracting, BMI Construction, Future Tech Consultants and Forest City Ratner Corp, DMJM+Harris, Turner Construction, Plaza Construction, Hunter Roberts, HNTB, GPI Berger Lehman Engineers, P B, Goldstein Associates and Columbia University.

### **ASCE Student Club**

The American Society of Civil Engineers (ASCE) is the oldest national engineering society. ASCE is dedicated to the mission of enhancing the quality of life worldwide by advancing professional knowledge and improving the practice of civil engineering in service to humanity.



Founded in 1852, the Society has over 120,000 members, including over 10,000 Student Members. ASCE sponsors specialty conferences and continuing education courses; provides the government with technical expertise on civil engineering related issues; monitors Congressional legislation critical to civil engineers; and conducts an active public awareness program. Over 700 technical, professional, and management committees within ASCE are working to advance the theory and practice of the profession.

New York City College of Technology's Student Club strives to follow the mission set forth by ASCE by offering technical presentations to student members on current construction practices and technology, taking part in the National Steel Bridge Competition which tests the knowledge, organization and leadership skills of our members, and field trips to construction sites in the New York City area.

# Associate in Applied Science in CONSTRUCTION MANAGEMENT

## Curriculum by Required Core and Additional Courses

The College will grant an associate in applied science degree (AAS) with a major in construction management technology upon satisfactory completion of the required 64 credits listed.

### CONSTRUCTION MANAGEMENT TECHNOLOGY

<u>MAJOR COURSES</u>		<u>Credits</u>
CMCE 1104/CT 104	Statics and Strength of Materials I	2
CMCE 1110/CT 110	Construction Drawings	2
CMCE 1114/CT 114	Methods & Materials of Construction I	3
CMCE 1152/CV 152	Surveying	3
CMCE 1204/CT 204	Statics and Strength of Materials II	3
CMCE 1220/CT 220	Construction Management I	3
CMCE 1224/CT 224	Methods & Materials of Construction II	2
CMCE 1255/CV 255	Computer Applications in Engineering Technology	3
CMCE 2306/CT 306	Materials Testing Laboratory	2
CMCE 2315 <sup>3</sup> CT 315 <sup>3</sup>	Elements of Structural Design-Steel	3
CMCE 2320/CT320	Construction Management II	3
CMCE 2412/CT 412	Construction Estimating	2
CMCE 2415 <sup>3</sup> /CT 415 <sup>3</sup>	Elements of Structural Design-Concrete	3
CMCE 2419/CT 419	Building Service Systems	2
CMCE 2420/CT420	Construction Management III	2
CMCE 2452/CV 452	Civil Engineering Drawing (CAD)	2
<b>Subtotal</b>		<b>40</b>
CMCE 2900	Construction Management Internship (optional)	3
<b>ADDITIONAL REQUIRED COURSES</b>		
MAT 1275	Introduction to Mathematical Analysis	4
MAT 1375	Mathematical Analysis	4
PHYS 1433	Physics 1.2	4
ENG 1101	English Composition I	3
BS/SS <sup>2</sup>	Social Science (ANTH, ECON, GEOG, GOV, HIS, PHIL, PSY, SOC)	3
LAP <sup>2</sup>	Literature/Aesthetics/Philosophy (ENG, AFR, MUS, FREN, PERF, SPA, SPE, PRS, THE, PHIL)	3
ENG 1121/1133	Communications	3
<b>Subtotal</b>		<b>24</b>
<b>TOTAL CREDITS REQUIRED FOR THE DEGREE</b>		<b>64</b>

NOTES:

1 Students without the requisite math background to enter MAT 1375 will be required to take MAT 1175 and/or MAT 1275 in preparation. This will increase the number of required credits for the degree by up to eight.

2 See the college catalog for detailed explanation of core required courses and categories.

3 See the course descriptions for an important message regarding these courses.

# Associate in Applied Science in CONSTRUCTION MANAGEMENT

## Curriculum by Semester

The College will grant an associate in applied science degree (AAS) with a major in construction management technology upon satisfactory completion of the required 64 credits listed.

<b>FIRST SEMESTER</b>		<b>Credits</b>
CMCE 1104	Statics & Strength of Materials I <sup>1</sup>	2
CMCE 1110	Construction Drawings	2
CMCE 1114	Methods & Materials of Construction I	3
CMCE 1152	Surveying	3
MAT 1275 <sup>1</sup>	Intro to Mathematical Analysis	4
ENG 1101	English Composition I	3
<b>Subtotal</b>		<b>17</b>
<b>SECOND SEMESTER</b>		
CMCE 1204	Statics & Strength of Materials II	3
CMCE 1220	Construction Management I	3
CMCE 1224	Methods & Materials of Construction II	2
CMCE 1255	Computer Applications in Civil Engineering Technology	3
PHYS 1433	Physics 1.2	4
<b>Subtotal</b>		<b>15</b>
<b>THIRD SEMESTER</b>		
CMCE 2306	Materials Testing Laboratory	2
CMCE 2315 <sup>3</sup>	Elements of Structural Design-Steel <sup>2</sup>	3
CMCE 2452	Structural Drawings (CAD)	2
CMCE 2320	Construction Management II	3
LAP <sup>2</sup>	Literature/Aesthetics/Philosophy	3
ENG 121 or 133	Communications	3
<b>Subtotal</b>		<b>16</b>
<b>FOURTH SEMESTER</b>		
CMCE 2412	Construction Estimating	2
CMCE 2415 <sup>3</sup>	Elements of Structural Design-Concrete <sup>2</sup>	3
CMCE 2419	Building Service Systems	2
CMCE 2420	Construction Management III	2
MAT 1375 <sup>1</sup>	Mathematical Analysis	4
BS/SS <sup>2</sup>	Behavioral Science/Social Science	3
<b>Subtotal</b>		<b>16</b>
<b>TOTAL CREDITS REQUIRED FOR THE DEGREE</b>		<b>64</b>

### NOTES:

1 Students without the requisite math background to enter MAT 1375 will be required to take MAT 1175 and/or MAT 1275 in preparation. This will increase the number of required credits for the degree by up to eight.

2 See the college catalog for detailed explanation of core required courses and categories.

3 See the course descriptions for an important message regarding these courses.

## **COURSE DESCRIPTIONS:**

### **CMCE 1104**

#### **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: MAT 1175

### **CMCE 1110**

#### **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. Students will develop an understanding of architectural working drawings relating to wood frame residential buildings and commercial buildings and their use in construction projects. Topics include drafting techniques and equipment, lettering, line work, geometric constructions, site plans, foundation drawings, floor plans, electrical, plumbing and heating/air conditioning plans.

### **CMCE 1114**

#### **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.

### **CMCE 1152**

#### **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.

Pre- or corequisites: MAT 1275, CMCE 1110

### **CMCE 1204**

#### **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

### **CMCE 1220**

#### **Construction Management I**

*3 cl hrs, 3 cr*

This course introduces the student to the basic practice of construction management and is designed to give the student a thorough understanding of the construction process. 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, CMCE 1114, CUNY certification in reading and writing

### **CMCE 1224**

#### **Materials & Methods of Construction II**

*1 cl hr, 2 lab hrs, 3 cr*

This course provides the student with an understanding of the three major categories of construction: foundations, substructure and superstructure. 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, CMCE 1114, CUNY certification in reading and writing

### **CMCE 1255**

#### **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, spreadsheets and presentation software. Visual basic is also introduced in this course.

Pre- or corequisites: MAT 1275, CMCE 1104, certification in reading and writing

## **CMCE COURSES** continued:

### **CMCE 2306**

#### **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 or CMCE 2415, CUNY certification in reading and writing

### **CMCE 2315**

#### **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.

Prerequisite: CMCE 1204; Note: Students should not register for both CMCE 2315 and CMCE 2415 simultaneously without departmental approval.

### **CMCE 2452**

#### **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. Students will learn the sequence of commands and/or steps required to start, create, save and plot CAD drawings.

Prerequisites: CMCE 1110, CMCE 1252; pre- or corequisite: CMCE 2315 or CMCE 2415

### **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, CMCE 1114, CMCE 1220

### **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, CMCE 1224

### **CMCE 2415**

#### **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 and applied. Students will learn to use tables and select design aids for simple designs.

Prerequisite: CMCE 1204; Note: Students should not register for both CMCE 2315 and CMCE 2415 simultaneously without departmental approval.

### **CMCE 2419**

#### **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: PHYS 1433

### **CMCE 2420**

#### **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