

# Civil Engineering Technology

At no time in recent history has the civil engineering field been more poised for growth than now. With the aging of the infrastructure (highways, city water supplies, waste water treatment plants, and bridges) and the upturn in construction caused by past years of delay in industrial expansion, the market for civil engineering technology graduates is strong.

Civil engineering technology students may choose one or more emphases in transportation, structural, or construction. Students study a diversity of topics including structural analysis and design, water and waste water systems, highway planning and design, and construction administration. Other courses include hydrology and hydraulics, construction estimating and scheduling, finite element analysis, advanced steel design, and advanced concrete structures. The B.S. degree requires additional arts and sciences electives designed to enhance the employability of students. The program is designed to provide students with the necessary skills to pursue a life-long career in civil engineering technology.

**The B.S. degree in Civil Engineering Technology is accredited by the Technology Accreditation Commission of the Accreditation Board of Engineering and Technology.**

Graduates of the program earn six years of education/experience credit towards licensure in New York State as a Professional Engineer. After graduation, they are eligible to register for the next offering of Part A of the Professional Engineering examination, Fundamentals of Engineering.

Structural, transportation and construction are the primary areas of emphasis.

**Structural** - Students choosing the structural emphasis are most often employed by engineering design firms, by design/build construction firms, or by local, state and federal governments. Coursework is provided in areas of structural analysis, building/structural design, conceptual to final design projects, and finite element analysis.

**Transportation** - Students choosing the transportation emphasis are most often employed by county or city highway departments, by state or federal departments of transportation or by road/bridge construction contractors. Coursework is provided in structural analysis, transportation planning, design of roadways, and drainage design.

**Construction** - Students choosing the construction emphasis are most often employed by design/build firms, construction contractors, and by local, state and federal agencies. Course work is provided in project scheduling and estimating, project administration, construction methods and structural analysis.



Students entering SUNYIT as freshmen who intend to major in Civil Engineering Technology should apply as an Undecided major and will receive appropriate academic counseling from Civil Engineering Technology faculty. Assuming satisfactory academic performance, these students will be able to change their major to Civil Engineering Technology after their first semester.

## B.S. Degree Requirements

To earn a Bachelor of Science (B.S.) degree in Civil Engineering Technology, a student must complete a minimum of 128 credit hours and fulfill the following requirements:

### 1. Arts and Science (60 credits) Minimum Credits

#### A. Mathematics and Science – 24 credits

Calculus I	3
Calculus II	3
Calculus-Based Math Elective	3
Physics I with Lab	4
Physics II with Lab	4
Chemistry with Lab	4
Math/Science Electives–Balance of 24 credits	

#### B. Liberal Arts and Communications – 24 credits

Coursework in at least 5 of the following 7 categories:

Social Science	
American History	
Western Civilization	
Other World Civilizations	
Humanities	
Arts	
Foreign Language	
Oral Communication	3
Basic Communication	3
Upper Division Written Communication	3

Liberal Arts Elective – Balance of 24 credits

#### C. Computer Programming Language 3

#### D. Arts and Science Electives

Balance to bring the total of A, B, C, and D to 60 credits

### 2. Technical Courses (minimum of 54 credits)

#### Coursework Required to be Taken at the Community College Level

Surveying	3
Soils and Foundations	3

#### Coursework Normally Taken at the Community College Level–SUNYIT Courses are sublisted

Problem Solving Techniques-CTC101	2
Statics-CTC 218	2
Strength of Materials-CTC 222	2
Engineering Graphics-CTC 212, 213, ITC 462	2
Steel or Concrete Design-CTC 422,424	3
Hydrology-CTC 260	2
Hydraulics-CTC 261	2
Transportation-CTC 340, CTC 440	3

#### Courses Normally Taken as Upper Level Work at SUNYIT

CTC 301 - Professionalism in the Workplace	2
CTC 320 - Structural Analysis	4
CTC 450 - Water and Wastewater Systems	4
CTC 475 - Engineering Economics	3
CTC 490 - Capstone Design	3

Note: CTC 101 meets the degree requirements for both Problem Solving and Professionalism

### \*Select One Emphasis:

#### Structural (Minimum Credits – 12)

Core Courses (8 credits)
CTC 422 – Design of Steel Structures
CTC 424 – Design of Concrete Structures

Required Elective (Minimum 4 credits)
CTC XXX – Upper Level Civil Engineering Technology Elective

#### Transportation (Minimum Credits – 12)

Core Courses (8 credits)
CTC 340 – Transportation Analysis
CTC 440 – Highway Design

Required Elective (Minimum 4 credits)
CTC XXX – Upper Level Civil Engineering Technology Elective

#### Construction (Minimum Credits – 12)

Core Courses (8 credits)
CTC 415 – Construction Estimating and Scheduling
CTC 470 – Construction Administration

Required Elective (Minimum 4 credits)
CTC XXX – Upper Level Civil Engineering Technology Elective

Civil Tech Electives - Balance of 54 credits

### 3. Open Electives Balance of 128 credits **TOTAL CREDITS - 128**

## CAD Proficiency

Success in the Engineering Technology field is strongly dependent on a proficiency in computer aided drafting (CAD). Many of our graduating students will be actively involved with CAD or will work directly with those who are. To ensure a minimum level of proficiency, all students are required to pass a CAD Test to graduate. CAD proficiency may be in either AutoCAD or Microstation.

## Civil Laboratories

Civil laboratories are heavily computerized. Students entering the program are expected to have basic skills in word processing, spreadsheets, computer aided drafting, and the use of the internet. Labs encompass all aspects of civil engineering technology and the computer applications which represent industry standards. Laboratories are PC-based networks running applications in AutoCAD, Microstation, RAM Structural System, InRoads, Haestad Methods, Microsoft Project and Primavera Project Planner.