

## CIVIL TECHNOLOGY, Certificate - 4220

*Engineering & Technology Department*

CIP Code: 15.0201

The Civil Technology certificate introduces students to the basics of CAD drafting and design in the following areas of civil engineering: highway, land development, drainage, erosion and sedimentation control, and surveying. In addition, students are able to write specifications and gain the skills necessary to assist engineers in preparing civil engineering plan submissions. A typical submission may contain specifications, reports, permits, cost estimates, project documentation, and presentations. The complete program is only available at the Harrisburg Campus.

### *Career Opportunities*

Graduates of this program are trained as technicians, designers, and CAD operators for employment in the civil engineering field. The program also prepares students for positions with surveying companies or as members of surveying crews.

**(SOC Code: 17-3011 Architectural and Civil Drafters)**

### *Competency Profile*

This curriculum is designed to prepare students to:

- Use AutoCAD, CAD Civil 3D, and MicroStation CAD software in the civil engineering environment
- Function as members of a crew performing surveying operations and processing data
- Layout an engineer's conceptual highway design and create the horizontal and vertical alignment
- Design commercial and residential building sites under the supervision of an engineer
- Interpret the major laws and codes that govern the practice of civil engineering, architecture, and surveying
- Draw boundary surveys
- Draft and design horizontal curves and vertical curves and operate a CAD station efficiently
- Develop contour plans, profiles, cut and fill lines, and cross sections
- With supervision, prepare drainage design for storm sewers, culverts and outfall protection
- Develop erosion and sedimentation control plans with the assistance of an engineer
- Utilize PennDOT Design Manuals for highway design and plan presentation
- Apply design basics of storm water management, utilities, parking, contours, plans, and profiles
- Design storm sewers, culverts, and outfall protection based on instruction from an engineer

### **PROGRAM REQUIREMENTS (TOTAL CREDITS = 30)**

General Education	Major Requirements		Other Required Courses	
	ARCH 130 Construction Materials & Methods	3	Open Elective	1
	ARCH 214 Site Planning	3		
	BCT 217 Construction Project Management	3		
	CAD 130 Civil Engineering Drawing	3		
	CVTE 103 Surveying I	3		
	CVTE 107 Civil Plan Reading	3		
	CVTE 212 Intro to Transportation & Environmental Engineering	3		
	ENGR 102 Engineering & Engineering Technology Orientation	2		
	GIS 141 Introduction to Geospatial Technology	3		
	GTEC 104 Engineering Materials & Processes	3		
		29		

### **RECOMMENDED SEQUENCE FOR FULL-TIME STUDENTS**

Part time students can complete this program by taking one or more courses each semester.

Fall Semester I		Spring Semester I	
CAD 130	3	ARCH 130	3
CVTE 103	3	ARCH 214	3
CVTE 107	3	BCT 217	3
ENGR 102	2	CVTE 212	3
GIS 141	3	GTEC 104	3
Open Elective	1		