Engineering at Cuyahoga Community College

Cuyahoga Community College offers a wide selection of programs to meet the educational and career needs of the individual. For those who aspire to become an engineer, the College has a Pre-Engineering program allowing students to complete their general studies before they transfer to a specific university for a specific discipline of engineering.

The College also offers many engineering technology (ET) programs, in which many are ABET (Accreditation Board of Engineering and Technology) accredited. Graduates of ET programs are equipped to start a technical career immediately or continue their baccalaureate education in select four-year colleges. One-year certificates of proficiency are also available for those who want to enhance their skills or learn a new trade.

Students at Cuyahoga Community College can expect learning through friendly small class sizes taught by engaging faculty members with broad industrial experience. Career counseling and academic advising are readily available from faculty and staff. The College offers financial aid supports in the form of Pell Grants, scholarships, and stipends. Open labs and tutoring supports are some of the many student support services provided to ensure successful program completion of all Tri-C students.
The five most common engineering disciplines: electrical, computer, mechanical, chemical, and civil are within the top eight of the 25 highest paid occupations. Other STEM majors rank-ordered by salary are: software design, computer programming, computer science, mathematics, construction, chemistry, agricultural sciences, and biology. The law of supply and demand indicates in general that higher paying occupations are also higher in demand.

Program Selections

PRE-ENGINEERING (EMPHASIS) A.S. DEGREE PROGRAM

- Generic Engineering Discipline
- General Education for Engineering Transfer
- Mostly TAG Courses, Transferable to Ohio Universities

A.A.S. DEGREE PROGRAMS

- Construction Engineering Technology (CNST)
- Electrical Engineering Technology (EET)
- Bio-medical Engineering Technology (MET)
- Manufacturing Industrial Engineering Technology (MET)
- Mechanical Engineering Technology (MET)

CERTIFICATE PROGRAMS

- Computer Aided Drafting (CAD)
- Computer Integrated Manufacturing
- Machine Tools Operation
- Quality Control
- Electronic Technician
- Construction Project Management
The Biomedical Engineering Technology program at Cuyahoga Community College (Tri-C®) leads to the associate of Applied Science degree in electrical/electronic engineering technology with a concentration in biomedical engineering technology. The program is based on the physical sciences, mathematics and communications, with a strong emphasis on electronics, electrical devices and biomedical engineering technology. During the specialized biomedical equipment courses, students learn the theory of operation, clinical application principles, safety, calibration, preventive maintenance protocols and troubleshooting of biomedical devices. Most of this program is laboratory based. Students complete an internship, in which they gain experience in a clinical engineering environment. Graduates of the Tri-C program are prepared for a career in biomedical engineering technology, becoming part of a health care team ensuring the safe and effective use of advanced technology for providing optimal health care.

Career Outlook
The field of biomedical engineering technology is achieving national recognition as a vital professional specialty in the health care industry. This technology-based field attracts individuals who are interested in working with people and high-tech equipment. Employment opportunities are available both nationally and in the Cleveland area for program graduates.

Entry-level positions are available at area hospitals and service companies, by medical equipment vendors and biomedical equipment manufacturers, as field representatives conducting electrical engineering tests of biomedical equipment.

Courses You'll Study
- DC and AC Circuits
- Digital and Microprocessor Technology
- Surface Mount Soldering
- Solid-State Electronics
- Signal Analysis
- Human Biology
- Electronic Instrumentation
- Networking Fundamentals
- Biomedical Instrumentation
- Biomedical Design Project
The Construction Engineering Technology program at Cuyahoga Community College (Tri-C®) prepares students to work at professional levels within the ever-expanding construction industry. Students earn an Associate of Applied Science degree in construction engineering technology. The curriculum combines studies in mathematics, engineering and basic sciences with a concentration in management methods as applied to construction. The program includes instruction in: Facilities equipment – heating, ventilating, plumbing, electrical, Structural components – steel, wood, concrete, The business of building – contracts, specifications, scheduling, estimating, “green” building, Construction surveying, Management – contract and bid documents, site layout and print reading. Graduates are prepared to be technical liaisons between design professionals and the construction trades. The program’s technical courses are typically offered at the Metropolitan Campus. Co-op positions may be available with local contractors and architectural/engineering firms.

Career Outlook

The Construction Engineering Technology program focuses on project management for construction. The multi-billion-dollar construction industry is seeking educated and trained people at all levels. Careers are available in engineering and architectural firms and with surveyors and general contractors. Positions range from field management technicians to estimators and schedulers. Opportunities are also available with building-material manufacturers and product distributors. Many graduates choose self-employment as subcontractors or general contractors.
The Digital Communications Engineering Technology program at Cuyahoga Community College (Tri-C) leads to the Associate of Applied Science degree in electrical/electronic engineering technology with a concentration in digital communications engineering technology. The program offers students comprehensive training in one of the most advanced and exciting disciplines. Beginning early in the curriculum, students are exposed to analysis of electric circuits, digital fundamentals, basic electronics and engineering computer applications. Later in the program, advanced courses focus on the specialized areas of signal analysis, communications standard, theory, and application. Structured lab activities and modern computer-based programs support student learning. Labs are equipped with professional-quality test equipment allowing students to build projects, test performance and verify results with cutting-edge simulation software.

Career Outlook
Graduates of the Digital Communications concentration in the Electronic Engineering Technology program can work as technical specialists in the broad and diverse field of communications, in such areas as installation, operation and maintenance of (principally) digital and analog communications systems. The program has been certified by the Society of Broadcast Engineers (SBE), which means that graduates with a "B" grade or better in core courses can become certified at the technician level without having to take the SBE qualification test.

Courses You’ll Study
- DC and AC Circuits
- Digital and Microprocessor Technology
- Surface Mount Soldering
- Signal Analysis
- Networking Fundamentals
- Electronics
- TCP/IP
- Digital Communication Fundamentals
- Wired and Wireless Communications
- Communications Design Project
Career Outlook

Electronics technology influences aspects of business, industry and everyday life. The demand for well-trained technicians is high. Graduates of the Tri-C program typically find employment as electronic technicians in such diverse fields as automotive, aerospace, manufacturing, power generation, digital and analog communication, process control and computer controls. Technicians work in various capacities in the design, testing and repair of electrical and electronic equipment.
The Manufacturing Industrial Engineering Technology (MET) associate degree program at Cuyahoga Community College (Tri-C®) provides a foundation for production-based technologies. Basic principles include technical drawing, machining, and manufacturing processes that are current with industry trends. Computer applications are essential for many of the Manufacturing Industrial Engineering Technology courses such as: Introduction to AutoCAD, Advanced AutoCAD, 3D Solid Modeling, CNC Programming and Operations, CAD/CAM Processes, and Product Development and Manufacturing. Hands-on learning provides an authentic reference for career exploration in a manufacturing environment. The Manufacturing Industrial Engineering Technology program provides flexibility through its elective offerings. Electives can be taken to emphasize the areas of Automation Engineering Technology, Drafting & Design Engineering Technology, and Quality Engineering Technology.

One year Certificates of Proficiency may be attained in Computer-Integrated Manufacturing, Computer-aided Drafting, Quality Control and Machine Tools Operation. Courses in the Manufacturing Industrial Engineering Technology program are offered days and evenings to accommodate students with various work schedules.

Career Outlook

As a manufacturing/industrial technician, you’ll help make production processes more efficient, while striving to ensure quality improvement throughout each process. You will also work with engineers in the translation of designs to finished products that fit the needs of market customers. Using the computer as a tool is now a standard practice for current manufacturing processes. Technology has brought substantial changes for manufacturing, thus requiring the need for a new generation of qualified industrial technicians.

Courses You’ll Study

- Technology Orientation
- Computer Applications and Programming
- Drawing and AutoCAD
- Machine Tools and Manufacturing Processes
- Engineering Materials and Metallurgy
- CNC Programming and Operation
- CAD/CAM Processes
- Fundamentals of Engineering Economics
- Advanced CAD & GD&T
- Fundamentals of Product Development and Manufacture
Career Outlook

Graduates of the MET program at Tri-C apply current technology used in design, production, operation, and maintenance of equipment and various mechanical systems in transportation, manufacturing, power generation, agriculture, and the construction industry. Due to emphasis on the use of computers in the curriculum, students are prepared to meet the challenge of entry-level positions as mechanical engineering technicians in modern industry. In a design team, graduates may be responsible for setup of the CAD system, development of the product model in the CAD system as designed by the engineer, preparation of details for design specifications, product analysis, and recommendation of design modifications, and serve as liaisons to the manufacturing team. Job prospects for MET program graduates are excellent and continue to grow. Increasing numbers of small and midsize industries are seeking mechanical engineering technicians conversant with the use of computers, CAD systems, and other relevant technologies taught in this program.
The Associate of Science degree with an emphasis in Pre-engineering is designed for the student who desires to transfer to a four year university and complete a bachelor’s degree in Engineering after finishing the Associate of Science degree at Tri-C.

This program has been reviewed with several northeast Ohio universities to make sure the course requirements will be accepted at the transfer university. As a result, students should be taking courses with the confidence in knowing they are headed toward their degree goals in an efficient and suitable manner.

This two year program is appropriate for a student interested in completing a four year degree in any of the key areas of Engineering including, but not limited to:

- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Computer Science
- Electrical Engineering
- Environmental Science
- Industrial Engineering
- Materials Science
- Mechanical Engineering

It should be noted that students interested in transferring to a four year university to complete their bachelor’s degree should contact the transfer school as early as possible in their academic program to ensure they are taking the most appropriate courses for that institution. This program does not require a student to go on and complete a four year degree. If a student stops after this degree program, he or she will still have an Associate of Science degree. It is, however, an excellent and efficient way for a student to use Tri-C as a stepping stone on the path to completing a four year engineering degree.

Near-by Public Universities for Transfer

Cleveland State University - Engineering
University of Akron - Engineering
Kent State - College of Applied Engineering, Sustainability and Technology
Youngstown State University - STEM

Courses You’ll Study

- Pre-Engineering
- Communication
- Calculus
- Differential Equation
- General Chemistry
- General Physics
- Arts and Humanities
- Social and Behavioral Sciences
Where futures begin

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