

# Tri-County Technical College

# 2021-2022 College Catalog

## Engineering & Industrial Technology Division

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The Engineering and Industrial Technology degree and certificate programs prepare students for exciting careers as automation specialists, multi-skilled technicians, supervisors in a manufacturing environment, automotive technicians, HVAC technicians, facilities technicians, industrial maintenance technicians, designers, CNC programmers, welders, or engineering technicians. The skills learned here can be used on the job in manufacturing,

residential and commercial construction, facilities maintenance, facilities management, automotive service centers, energy producing facilities, and more. With increasing technology, companies need more and more workers with advanced training and skills. The highly qualified faculty provide real-world experience through project-based learning. Day, evening, online, and hybrid courses are available to accommodate busy schedules.

Students may receive credit toward a certificate or degree based on prior educational experience, work experience, and military experience. Students interested in obtaining advanced standing for course work should contact their academic advisor. More information is available under “Advanced Standing” in this Catalog.

The Engineering and Industrial Technology Division provides rigorous, hands-on learning experiences that require the regular participation of the student. As such, the Engineering and Industrial Technology Division has a more rigorous attendance policy than the College. Any student who accumulates more absences during the term than the class is scheduled to meet in a two-week period is subject to being withdrawn from the class. The number of allowable absences during the summer term or other sessions of varying length will be 10% of the total number of class meetings. Students who arrive late may, at the discretion of the instructor, be marked absent for that class. Students who continually arrive late to class are subject to being withdrawn from the class. In extenuating circumstances, a student may request re-admittance to class by meeting with the instructor and explaining the circumstances of the absences. If the instructor agrees to re-admit the student, the student will be informed of the requirements which must be met to successfully complete the course. Individual departments or programs may have a more rigid attendance policy. Those policies must be communicated in writing to students on the first day of class.

- [Division and Department Contacts](#)
- [Division Faculty](#)

## Engineering and Industrial Technology Departments

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### Automotive Technology

#### Program Information

The Automotive Technology program offers an associate degree and four certificate options. The program trains students in the testing, diagnosis and service of motor vehicles. Graduates may find employment in automotive dealerships, working for themselves, and at independent service centers. Credit for courses in the certificates also can be applied toward the associate degree.

## Scheduling and Entry Options

Day classes are available. Although a student may enter in any term, starting in the Fall Semester is highly suggested. Full-time students usually complete requirements in five semesters. Part-time students should allow nine to eleven consecutive semesters to earn the degree. General Education course requirements can be completed at any time during the program.

[www.tctc.edu/auto](http://www.tctc.edu/auto)

[Display programs for Automotive Technology.](#)

## CNC Programming and Operations

### Program Information

CNC Programming and Operations prepares graduates to work as CNC programmers and operators with manufacturers requiring high production volumes or short run batches of discrete parts. The program offers an associate degree and four certificate options. Credit for courses in the certificates also can be applied toward the associate degree.

### Scheduling and Entry Options

Program courses are offered during the day beginning in the Fall Semester of each year and are offered at the Industrial Technology Center (ITC) in Sandy Springs. Additionally, the first three semesters of the associate degree are available at the Oconee Campus. Entry during any other term will be permitted but may limit the courses that are available. Full-time day students usually complete requirements in six terms. General Education course requirements can be completed at any time during the program. Courses can be completed in any order subject to the completion of course prerequisites.

[www.tctc.edu/cnc](http://www.tctc.edu/cnc)

[Display programs for CNC Programming and Operations.](#)

## Engineering Design Technology

### Program Information

The Engineering Design Technology program offers an associate degree. This program prepares students to translate product ideas into engineering drawings and documentation using computer software. In addition, students will learn how to draw mechanical parts in three dimensions and use CAD/CAM software and equipment to produce parts. Instruction is included in software packages like AutoCad, Catia, and Solid Works. Students will also work with three-dimensional scanners and printers to develop skills in reverse engineering. Graduates are typically employed as part of a design team by manufacturing, engineering, and mechanical companies.

### Scheduling and Entry Options

Program courses are offered during the day beginning in the Fall Semester of each year. Entry during any other term will be permitted but may limit the courses that are available. Full-time day students usually complete degree requirements in five terms. General Education course requirements can be completed at any time during the program. Courses can be completed in any order subject to the completion of course prerequisites.

[www.tctc.edu/edt](http://www.tctc.edu/edt)

[Display programs for Engineering Design Technology.](#)

## General Engineering Technology

### Program Information

The General Engineering Technology Program (GET) offers an associate degree for students who want to gain knowledge in designing, prototyping, building, troubleshooting, and optimizing the type of control systems that are used in today's high-tech industries and businesses. The students gain knowledge in electricity, electronics, digital circuits, computer controlled devices, system programming, programmable logic controllers (PLC), human machine interfaces (HMI), industrial networking, pneumatics, robots, computer aided design (2D & 3D CAD), problem solving, and critical thinking. The core GET courses are project based, which means the students progressively use their new knowledge to design and implement complex control systems that integrate multi-disciplinary technology and equipment. The advanced skills gained in GET are needed in diverse job markets today, including manufacturing, industry, design labs, quality labs, supply chains, and other businesses that utilize the current Fourth Industrial Revolution (Industry 4.0) smart technology control strategies.

GET also offers a certificate option in Engineering Science - Transfer. This certificate covers the courses ordinarily required by students who wish to transfer to a four-year engineering program.

### **Scheduling and Entry Options**

All program courses are offered during the day with some courses available in the evening and online. Program courses begin in the Fall Semester of each year. Entry during any other term will be permitted but may limit the courses that are available. Courses are offered in the fall, spring and summer terms on a one-time per year basis for most of the required General Engineering Technology courses. Full-time students usually complete requirements in five terms. Part-time students should allow at least nine terms to earn the degree. General Education course requirements can be completed at any time during the program, with the exception of math and physics. Courses can be completed in any order subject to the completion of course prerequisites.

[www.tctc.edu/get](http://www.tctc.edu/get)

[Display programs for General Engineering Technology.](#)

## **Heating, Ventilation & Air Conditioning Technology**

### **Program Information**

The Heating, Ventilation, and Air Conditioning Technology program offers an associate degree and two certificate options. Graduates service equipment in homes, businesses, and industries. Graduates may choose to work independently or for equipment distributors, for small companies or large ones, in building automation systems or facilities maintenance.

### **Scheduling and Entry Options**

Day and evening classes are available. Full-time day students can expect to complete the program in five terms. Evening students should allow eight to ten terms to complete the degree. General Education course requirements can be completed at any time during the program.

[www.tctc.edu/hvac](http://www.tctc.edu/hvac)

[Display programs for Heating, Ventilation & Air Conditioning Technology.](#)

## **Industrial Electronics Technology**

### **Program Information**

Industrial Electronics Technology prepares students to pursue virtually any career with "technician" in the description. The program provides a solid foundation in DC and AC electricity, electronics, and solid state electronics. Solid state electronics focuses upon power delivery, switching, and sensor applications. Courses in basic motor controls theory, ladder logic, and control wiring progress to advanced motor controls applications such as variable frequency drives, DC drives, and Programmable Logic Controllers (PLC) integration. Additional skillsets centered on employability skills and quality control help to further equip students for multi-skilled technician positions.

The Industrial Electronics Technology program offers an associate degree and two certificate options (Technical Operations I and Technical Operations II, listed under Mechatronics Technology). Credit for courses in the certificates can be applied toward the associate degree. All Industrial Electronics students must maintain a 2.0 GPA and receive a grade of C or higher in EEM courses to qualify for graduation with an associate degree.

### **Scheduling and Entry Options**

Day and evening classes are available. The full program is available on the Pendleton Campus. Additionally, the first two semesters are available on the Anderson and Oconee Campuses. Although major courses begin in the Fall Semester, students may enter any term. Full-time students usually complete requirements in five terms. Part-time students, day or evening, should allow nine to eleven consecutive terms to earn the degree. General Education course requirements can be completed at any time during the program. Courses can be completed in any order subject to the completion of course prerequisites.

[www.tctc.edu/iet](http://www.tctc.edu/iet)

[Display programs for Industrial Electronics Technology.](#)

## **Manufacturing Management and Leadership**

### **Program Information**

This degree program equips students for careers as supervisors/team leaders in manufacturing by teaching leadership and communication skills unique to an industrial environment. In addition, heavy emphasis is placed on Lean Manufacturing practices, quality principles, managerial accounting, and industrial safety. Students are required to complete technical coursework selected from any technical field in the Engineering and Industrial Division.

The Manufacturing Management and Leadership program offers two associate degrees, and six certificate options. Credit for courses in the certificates can also be applied toward the associate degree. The Production and Operations Emphasis, A.A.S., Manufacturing Operators I Certificate, Manufacturing Production I Certificate, and Manufacturing Production II Certificate are restricted for TCTC I-BEST students.

### **Scheduling and Entry Options**

Day and evening classes are available. Although major courses start in the Fall Semester, students may enter any term. Full-time day students usually complete degree requirements in five terms. Students working swing shifts can have classes arranged around their work schedules. Many of the core courses are offered online. General Education course requirements can be completed at any time during the program. Courses can be completed in any order subject to the completion of course prerequisites.

[www.tctc.edu/mml](http://www.tctc.edu/mml)

[Display programs for Manufacturing Management and Leadership.](#)

## **Mechatronics Technology**

### **Program Information**

The Mechatronics associate degree program is designed for students who want to make a career out of becoming a technician in the world of automation. The program assists students in acquiring the multifunction skills needed in today's manufacturing environment as an entry-level technician. Today's industry relies on well-trained electromechanical technicians to reduce downtime and increase efficiency of the equipment. This is the thrust of Mechatronics. Students learn how to diagnose and repair a variety of automation systems such as mechanical, electrical, hydraulics, pneumatics, PLCs, and robotics. They learn the importance that each system plays in the automation process and how they relate to each other. There is a focus placed on troubleshooting, as well as 21st century soft skills, such as communication and interpersonal skills, and computer skills.

The Mechatronics program offers an associate degree and two certificate options. Credit for courses in the certificates also can be applied toward the associate degree.

### **Scheduling and Entry Options**

Day and evening classes are available. The full program is offered on the Pendleton Campus. Additionally, the first two semesters are offered on the Anderson and Oconee Campuses. Full-time day students usually complete requirements in five terms. For students taking a reduced load, a degree requires eight to ten terms. General Education course requirements can be completed at any time during the program. Courses can be completed in any order subject to the completion of course prerequisites.

[www.tctc.edu/mech](http://www.tctc.edu/mech)

[Display programs for Mechatronics Technology.](#)

## **Welding Technology**

### **Program Information**

The Welding program prepares students for a variety of employment opportunities, primarily in construction and metalworking. Courses offer hands-on, practical training in basic and advanced welding techniques. Students learn to weld steel, stainless steel, aluminum, pipe, and to perform other welding skills needed in the workplace.

The Welding Technology program offers one associate degree option and four certificate options. Credit for courses in the certificates also can be applied toward the associate degree.

### **Scheduling and Entry Options**

Day and evening classes are available, and students may enter any term. Full-time day students usually complete requirements in six terms. For students taking a reduced load, a degree requires eight to ten terms. General Education course requirements can be completed at any time during the program. Courses can be completed in any order subject to the completion of course prerequisites.

[www.tctc.edu/wld](http://www.tctc.edu/wld)

[Display programs for Welding Technology.](#)

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