WELCOME

Bristol Technical Education Center (BTEC) provides a unique, focused and rigorous educational program for each student who chooses to attend. This booklet provides students, parents and members of the community with information regarding specific courses which have been carefully crafted into a comprehensive educational program or "program of studies."

ABOUT US

Bristol Technical Education Center (BTEC), part of the Connecticut Technical Education and Career System (CTECS), is located in Bristol, Connecticut.

Adult, eleventh- and twelfth-grade students come to BTEC from 42 towns to learn one of our six technologies. Adult students (high school diploma or GED required) attend our full-time day programs to earn a technology certificate. Unlike CTECS' other technical high schools, BTEC grade 11 and 12 students remain a part of their sending schools but participate in our year-end certificate ceremony.

BTEC also oversees two extension campuses, each offering an exceptional program for Aviation Maintenance Technicians - CT Aero Tech and the Stratford School for Aviation Maintenance Technicians.

Adult apprentice and extension part-time evening courses are offered during the fall and spring semesters.

MISSION STATEMENT

The mission of Bristol Technical Education Center is to provide a unique and rigorous learning environment that:

- Ensures both career technical education mastery and student success, as well as promotes enthusiasm for lifelong learning;
- Prepares students for apprenticeships, immediate productive employment, as well as continuing education; and
- Engages regional and state employers, industry partners, CTEC representatives, our sending schools, and members of our family community in a vibrant collaboration that responds to current, emerging and changing workforce needs and expectations.

MANUFACTURING CLUSTER

MECHATRONICS PROGRAM SEQUENCE – 1 YEAR PROGRAM

5.0 credits High School students / 7.0 credits Post-Graduate students

PROGRAM DESCRIPTIONS

Introduction to Mechatronics

Students deciding to enter the Mechatronics field will be introduced to the basics of safety as well as equipment identification and use. Students are introduced to mechanisms and a wide variety of electromechanical principles and practices. Safety, hand tool and digital multi-meter use are demonstrated and practiced. Career opportunities are explored. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Basics of Electrical and Electronic Circuitry, Motors, Generators, Motor Controls and Power Supplies

Students learn circuit interpretation, design and construction through the use of computer assisted training and simulators. Principles of direct current (DC), alternating current (AC), magnetism, semiconductors and electronic devices are taught and practiced. Students demonstrate the ability to use test equipment to measure electrical and mechanical variables. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Semiconductor Devices, Pneumatics, Robotics and Programmable Logic Controllers, Hydraulics and National Electrical Code

Students are instructed and demonstrate skills in construction and diagnostic repair of direct current (DC) motors, alternating current (AC) motors, motor controls, hydraulic and pneumatic devices and equipment. Motor control design use and troubleshooting are taught and practiced with simulators and motor controls. Electronic circuitry is instructed and practiced. The National Electrical Code (NEC) is presented through basic projects and students demonstrate analytical skills needed to verify or troubleshoot residential and commercial low- and high-voltage wiring, including commercial and residential alarm and automation systems. Students will perform in-school electromechanical projects for customers. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

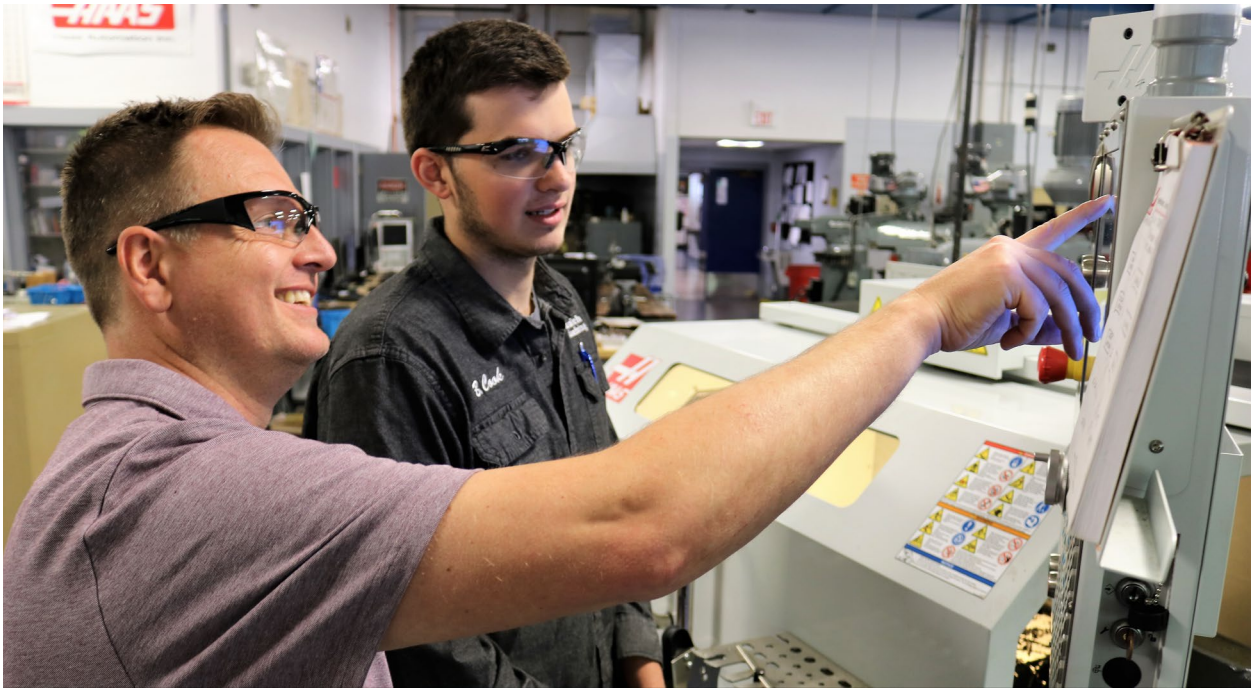
Digital Electronics, Robotics, Programmed Logic Controllers, Variable Speed Drives and Industrial Machine Maintenance Practices

Robotics, programmable logic controllers (PLC) and variable speed drives are taught. Motor controls, hydraulics, pneumatics and electrical theories are applied to the field of major appliance repair. Digital electronics are instructed and practiced. Service documentation is developed and tested. Students are instructed in preventative maintenance schedules, and proper maintenance procedures are practiced. Troubleshooting, part nomenclature, interpretation and application of schematics and proper service techniques are refined. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will demonstrate the ability to complete a job application and interview and have entry-level job readiness and trade skills. Students will perform in-school electromechanical projects for customers. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each student will take the SkillsUSA® - Skills Connect assessment, which is a performance-based test. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to enter the workforce and acquire positions as production development technicians in manufacturing facilities and robotics technicians in assembly applications. Additionally, repair technicians for all phases of high- and low-voltage electricity, hydraulic and pneumatic mechanical controls. Students that elect to further their education will be able to pursue a two-year or a four-year degree in the areas of mechanical, electrical or electronic engineering.

PRECISION MACHINING TECHNOLOGY PROGRAM SEQUENCE – 1 YEAR PROGRAM

5.0 credits High School students / 7.0 credits Post-Graduate students



PROGRAM DESCRIPTIONS

Precision Machining Technology

Students deciding to enter the Precision Machining Technology field will be introduced to the basics of safety, as well as the use and care of hand tools, power tools and stationary equipment. Manufacturing methods are initiated with an introduction to machinery and material types, along with their basic applications. Students start with small metalworking projects, which lead to projects that are more complicated. Technology-related mathematics, reading, writing, vocabulary, machine trade print reading and science are integrated throughout the curriculum.

Precision Machining Technology Practices and Principles

Students are instructed in and demonstrate skills and knowledge in machine safety, measuring tools, speeds and feeds, lathe operation, mill operation, pedestal grinder, various types of cutting tools and drill press operation. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary, machine trade print reading and science are integrated throughout the curriculum.

Precision Machining and Introduction to Computer Numerical Control (CNC)

Students continue to refine skills introduced and move on to CNC machining. Students receive advanced instruction and training in the use of measuring tools, material types, advanced lathe operation, advanced mill operation, layout and inspection. Introduction to MasterCAM©, computerized numerical control (CNC) machining and programming are introduced. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will perform in-school manufacturing projects. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, machine trade print reading and science are integrated throughout the curriculum. Students receive instruction and demonstrate skills in more advanced areas of manufacturing technology, such as lay-out and turning irregular shapes, turning eccentric, CNC programming, specialized vertical mill attachments. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will continue to perform in-school machining projects. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills.

Students' will be assessed against industry-recognized national standards. The National Institute for Metalworking Skills (NIMS) is the nations' only American National Standards Institute accredited developer for the precision manufacturing industry. NIMS competency-based assessments are used to demonstrate mastery of program goals and earn students industry-recognized credentials. Students reaching an acceptable level of proficiency may be eligible for Work -Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, machine trade print reading and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year or a four-year degree in the area of manufacturing or mechanical engineering, or other related fields. Graduates electing to enter the workforce typically acquire positions as CNC operators or programmers, toolmakers, mold-makers, or engineering technicians.

WELDING AND METAL FABRICATION PROGRAM SEQUENCE – 1 YEAR PROGRAM

5.0 credits High School students / 7.0 credits Post-Graduate students

PROGRAM DESCRIPTIONS

Introduction to Welding and Metal Fabrication

Students deciding to enter the field of Welding and Metal Fabrication will be introduced to the basics of safety and sanitation, as well as equipment identification and use. Students learn about the variety of careers available in the welding and metal fabrication industry, hand tools and shop equipment. Different modes of welding are demonstrated and practiced. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Basics of Welding, Metal Cutting and Preparation

Arc welding is demonstrated and practiced. Students prepare sections for joints, fillets and grooves and then test-weld. Proper use of machine cutting tools is demonstrated and then practiced by students. Oxy-fuel cutting and joining processes are taught and practiced, and quality is examined and diagnosed. Gas Metal Arc Welding (GMAW) applications, parameters, gases, wire types and sizes are studied demonstrated and practiced. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Metal Fabrication and Advanced Welding Techniques

Industry weld symbols are defined and applied to blueprint interpretation. Metal identification, properties and applications are taught and practiced. Destructive and nondestructive welding inspection are demonstrated and practiced. Pipe welding is introduced and demonstrated. Shielded Metal Arc Welding (SMAW), Flux Core Arc Welding (FCAW), Plasma Arc Welding (PAW), and Gas Tungsten Arc Welding (GTAW) are introduced with discussion and exercises on procedures and applications. Students begin preparation for certification assessments. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will perform in-school welding projects for customers. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Ferrous and Non-Ferrous Material Welding, Pipe Welding and Welding Qualifications

On-site flat, horizontal, vertical and overhead application welding skills are demonstrated and practiced by students. Characteristics of stainless steel and aluminum are taught and specific welding techniques are demonstrated and practiced. Pipe and tube welding is demonstrated and practiced. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will demonstrate the ability to complete a job application, a practice interview and have entry-level job readiness and trade skills. Students will perform in-school welding projects for customers. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). All students are required to complete summative assessments that adhere to AWS standards. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year or a four-year degree in mechanical engineering. Students electing to immediately enter the workforce typically acquire positions as welders in the aviation and aerospace industries, large construction companies and independent welding and fabrication shops.