



Program: AET: Mechatronics Technology
(CIP 47.0199 Electrical/Electronics
Maintenance and Repair
Technologies/Technicians, Other)

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Office Hours: 1:55 pm - 2:30 pm (M-F)
School Year: 2025-2026

The Applied Engineering Technology program is clustered, and all enrolled students spend an equal amount of time in each of the three classes: Computer Systems and Cybersecurity, Electronics/ Green Energy, and Mechatronics.

Program Overview

Mechatronics Engineering Technologies introduces state-of-the-art technology that is used in today's high-tech manufacturing industries. Integrated systems will prepare students for post high school education and/or future occupations by giving them career, business, and technical knowledge. Students aspiring to become engineers and technicians will learn the essential skills needed to prepare for the high performance manufacturing workplace of the 21st Century. Students will gain skills and the knowledge needed for a career in design engineering as they learn each aspect of the design process. Graphic design also includes use of advanced 2D and 3D CAD as well as parametric design software. Solid works and inventor software is also used. Students will learn quality control, electricity/electronics, mechanical systems, automation and material handling, and manufacturing processes.

Industry Certifications

Students in the Mechatronics Technology program have the opportunity to earn the following certifications:

- CareerSafe/OSHA
- OSHA Certification
- Certified Electronics Technician Associate (CETa)
- PMMI Heartsaver AED, CPR & First Aid
- Student Electronics Technician (SET)
- Microsoft Office Specialist – Microsoft Word – Expert Level (2000, XP, 2003)

Program Task List

Students entering BCTHS for the first time will be oriented to the requirements for completing their years of work as outlined on a program's task list. The instructor will monitor performance of the established task and record when various levels of performance are achieved. All students are able to view their updated task list and monitor their progress towards completion of the entire list.

The following evaluation criteria are used to recorded achievement of various tasks:

- (1) Instructed/ Cannot Perform - Student has had instruction on a task but requires close supervision to complete the skill/ task. Full retraining and continued practice of the task/skill is required
- (2) Familiarization (Pre-Entry Level)- Students are familiar with the skill/task objective and process but require limited supervision to complete the skill/ task. Some additional training and practice is

required.

(3) Satisfactory (Entry Level)- Student is minimally competent and able to perform skill/task independently, to industry standards, and without supervision.

(4) Mastery - Student is proficient and has mastered skill/task. Students are considered highly qualified for entry-level employment in this skill/task.

While enrolled in the Mechatronics Technology program at BCTHS, students will be instructed and assessed on the following task units:

- Q - INTRODUCTION TO ELECTRICITY & ELECTRONICS
- R - WIRELESS COMMUNICATIONS
- S - COMPUTER/TV DISPLAYS
- T - ELECTRO-MECHANICAL SYSTEMS/MANUFACTURING/AUTOMATED PROCESSES
- U - AUDIO SYSTEMS
- V - ALARMS AND BUILDING AUTOMATION
- W - WIRED COMMUNICATIONS/TELECOMMUNICATIONS
- X - CERTIFICATIONS
- XX - EMPLOYABILITY SKILLS

Competencies achieved in the Mechatronics Engineering Technologies program at BCTHS are deemed potentially equivalent to the following Bucks County Community College course:

- ENGT999-Applied Engineering Elective (up to 8 credits upon assessment)

Dress Code/Uniform Requirements

- An AET program t-shirt, polo shirt, or sweatshirt must be worn and must be purchased through the school store (approximate cost \$15.00 to \$30.00 per shirt depending on the style purchased).
- Appropriate business attire - no sweat pants - jeans are permitted; however, no tears, rips, holes, etc.
- No excessive or hanging jewelry is to be worn.
- WORK BOOTS ARE REQUIRED IN ALL AET CLASSROOMS.

Equipment, Materials, Uniform, Other Requirements

Required: Lab books, equipment, kits, and/or software must be purchased annually at an approximate cost of up to \$150.00 per year and are available for purchase at the school only.

Test-Out software licensing must be purchased the first week of school through Mr. Ryan.

OSHA certifications are required by BCTHS at a cost of \$35.00. This is an AET requirement.

- Large 3-ring loose leaf notebook for 8½" x 11" standard paper for handouts and learning guides
- Thick 8½" x 11" spiral notebook for class notes and assignments
- Pens, pencils and erasers
- A thumb drive will be needed to transport files, at least 2GB capacity
- An engineering calculator will be supplied in 10th grade at a cost of approximately \$20.00

*All prices are subject to change as BCTHS does not set the prices.

The CET, SET, CST, or CompTIA A+ test must be taken during the senior year and paid for by the student, the cost for the professional exam is \$35.00 to \$150.00 depending on the exam taken.

Textbooks and Learning Management Systems

Textbooks and assignments will be accessed through google classroom and delivered by the instructor. Student grading will be completed in Skyward and Program Task Tracking will be completed in

CTE360.

The program used in the Mechatronics Technology program is:

- learnamatrol.com

Career and Technical Student Organizations- SkillsUSA

Chapter Name- Bucks County Technical High School Charter #3425

Bucks County Technical High School provides all of its students with membership in SkillsUSA. This includes all students in grades 9 through 12.

Career and Technical Student Organizations (CTSO)

All students enrolled in Bucks County Technical High School participate in SkillsUSA. Students who become members in these co-curricular organizations have the opportunity to participate in team building, competitions, leadership, community service and social events.

SkillsUSA- SkillsUSA is a national student organization that strives to make each student more employable through the development of participatory, and leadership skills to complement the occupational skills developed by students in technical education classrooms or work-based learning sites. SkillsUSA is an integral part of approved technical education occupation programs.

National Technical Honor Society-The National Technical Honor Society is an educational non-profit that exists to honor, recognize, and empower students and teachers in Career & Technical Education. As the honor society for Career & Technical Education, NTHS serves over 100,000 active members annually in both secondary and postsecondary chapters across the country.

Career & Technical Education Students SOAR

The Pennsylvania Department of Education (PDE) supports career and technical education students aligning their high school courses to a college program in order to complete a degree, diploma or certificate. If you are a career and technical education student, use the resources below to learn about the credentials needed to qualify for SOAR program credit.

What Is SOAR? SOAR stands for Students Occupationally and Academically Ready. SOAR programs articulate skills and tasks gained at the secondary school (high school) level to course credit earned in a postsecondary (college) degree, diploma or certificate program.

SOAR programs can help students:

- Prepare for entering the job market with college and career ready skills
- Choose the best career pathway
- Save money on college tuition
- Save time by not duplicating coursework in college

How Do I Qualify for SOAR Credits? Qualified SOAR program students are eligible to apply for credits up to 3 years after their high school graduation date. In order to qualify for SOAR program post secondary credits a student must:

- Earn a high school diploma, with a minimum 2.75 GPA on a 4.0 scale in the technical core courses
- Complete the secondary school component of the approved PDE Program of Study

- Achieve proficiency on all tasks of the approved PDE Program of Study Competency Task List
- Achieve competent or advanced level on the secondary school end-of-program assessment that is appropriate for the approved PDE Program of Study

Work-Based Learning

It is a privilege for students to partake in the School-to-Career Program. Students are not required to participate; therefore, they can be removed at any time. Due to strenuous liability and accountability issues, under no uncertain terms can this privilege be abused. These experiences are an integral part of the school's curriculum, and participation will reflect directly on the student's academic standing. Typically, students must receive a "C" or better and have a good attendance and discipline record. Please see the School to Career Office for more information on a variety of work-based experiences for students, including Cooperative Education, Internships, Job Placements, and School-to-Career transition programs.

Junior and Senior students are eligible to participate in the School-to-Career program after completing a pre-evaluation form.

Additional Requirements (Seniors) – Seniors must complete a minimum of 75% of their task list, maintain a C Final Average in all classes, have zero discipline referrals for Senior year, and less than 10 combined Unexcused Absences and Tardies.

Additional Requirements (Juniors)- Juniors experiences are available after the second marking period. Juniors must complete a minimum of 60% of their task list Maintain a C Final Average in all classes, have zero discipline referrals for Junior year, and less than 10 combined Unexcused Absences and Tardies.

Technical Program Participation During Work-Based Learning- Students are required to check in with their Technical Instructor during the academic rotation and sign in. All students are required to be in for the NOCTI Exam and pre-determined NOCTI Prep days. (Additional options: Students are required to come in one day per rotation. Students are required to stay each morning for theory and will be dismissed for COOP.)

Grading Procedures for Work-Based Learning: Students will be graded by averaging the Employer Evaluation and required classwork. (Additional options: Employer evaluation only. Required assignments only.)

Daily Class Procedures

Students will participate in this program on a 6 day rotation. This rotation will include 6 days of Technical instruction followed by six days of Academic instruction. Students will report directly to the programs and change into appropriate program attire. The program instruction will be split between theory (20%) and experiential learning (80%).

Classroom Rules

- Read and follow all BCTHS rules as outlined in the handbook
- Mutual respect- we all respect each other

- Respect all property, tools, and equipment
- Safety is everyone's responsibility
- Be professional at all times
- All injuries must be reported
- Hall passes are required anytime you leave the program
- Only use equipment you are approved to use
- Discipline procedures as outlined in the handbook are strictly followed

Safety

Safety is not an option! Safety is your responsibility! Students are required to follow all rules and regulations. In addition to following all BCTHS handbook procedures, students must follow all safety standard operating procedures for each program area. Students are not permitted to use any tools or equipment unless they have received and have documented appropriate training.

Grading Policy

Work Ethic (Employability Skills) 30%
 Knowledge Base (Tests, Quizzes, Assignments) 30%
 Skill (Technical Projects, Task list assessments) 40%

Attendance Procedure

Students are expected to follow all attendance procedures as outlined in the student handbook. Due to the amount of work it takes to complete program assignments your attendance is essential to get the most out of your learning experience. If you are going to be late or absent please have your parents call the school or bring in a note.

Students who are absent/unexcused will receive a work ethic grade of a “0” for the day. If the absence is excused, the student will receive a work ethic grade of 50% of the maximum points available with an opportunity to make up the assignment and have their work ethic change to the maximum points available. Students who are late/unexcused will receive a work ethic grade of 50% of the maximum points available for the day. If the lateness is excused, the student will receive an opportunity to make up the assignment and have their work ethic change to the maximum points available.

By signing below, we acknowledge that we have received, read, and understand the course syllabus. We are aware of the course expectations, grading policies, classroom procedures, and other important information outlined in the syllabus. We agree to support and adhere to the guidelines provided to ensure a successful and productive school year.

Student Name (Please Print) _____

Student Signature _____ Date: _____

Parent/ Guardian (Please Print) _____

Parent/ Guardian Signature _____ Date: _____

