Butler Tech Engineering
Essential Skills Profile

This profile provides an outline of the skills required for successful completion of this career program. Additional information is located on the Butler Tech website at: https://www.butlertech.org/high-school/ and selecting the corresponding career program.

Recommended WorkKeys® Scores for Engineering

Applied Mathematics-5	Graphic Literacy-6
Workplace Documents-6	

*Practice tests and more information at: www.act.org/workkeys

Skills

Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
Judgment and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.

Abilities Required

Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).

Knowledge Required in Engineering

Engineering and Technology	Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.
Computers and Electronics	Knowledge of circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.
Design	Knowledge of design techniques, tools, and principles involved in production of precision technical plans, blueprints, drawings, and models.

Engineering Skills

- Design engineering systems for the automation of industrial tasks.
- Create mechanical design documents for parts, assemblies, or finished products.
- Maintain technical project files.
- Design, develop, or implement control circuits or algorithms for electromechanical or pneumatic devices or systems.
- Implement or test design solutions.
- Create mechanical models and tolerance analyses to simulate mechatronic design concepts.
- Conduct studies to determine the feasibility, costs, or performance benefits of new mechatronic equipment.
- Design advanced electronic control systems for mechanical systems.
- Research, select, apply sensors, communication technologies, or control devices for motion control, position sensing, pressure sensing, or electronic communication.
- Publish engineering reports documenting design details or qualification test results.
- Identify and select materials appropriate for mechatronic system designs.
- Develop electronic, mechanical, or computerized processes to perform tasks in dangerous situations,such as underwater exploration or extraterrestrial mining.
- Apply mechatronic or automated solutions to the transfer of materials, components, or finished goods.
- Design mechatronics components for computer-controlled products, such as cameras, video recorders,automobiles, or airplanes.
- Design advanced precision equipment for accurate or controlled applications.
- Upgrade the design of existing devices by adding mechatronic elements.
- Create embedded software design programs.
- Analyze existing development or manufacturing procedures and suggest improvements.
- Provide consultation or training on topics such as mechatronics or automated control.
- Oversee the work of contractors in accordance with project requirements.

Technology

Operating system software	File versioning software
Development environment software	Computer aided design CAD software
Analytical or scientific software	

Personality

Investigative: People interested in this work like activities that include ideas, thinking, and figuring things out. They do well at jobs that need:	
Innovation	Attention to Detail
Analytical Thinking	Persistence
Initiative	Integrity

Available Certifications

Certified Solid Works Professional (CSWA)(4 points)	

Possible College Credits

College Credit Plus in English, Math, Social Studies, or Science	Must be preapproved. Must pass a college course at an Ohio college or College Credit Plus class at Butler Tech.
Career Technical Credit Transfer	The Ohio Transfer to Degree Guarantee helps career and technical students transfer credits earned in high school to community college or four-year degree programs. The credit can be used at any Ohio public college or university: • If you successfully completed your career-technical program and passed certain required assessments. • If you attend a similar program at a public Ohio college or university. For more information, go to www.transfercredit.ohio.gov

*Additional college or post-secondary education may be required in this field.

Possible Career Pathways

Manufacturing Installer	Robotic Programmer
Quality Control Inspector	Engineer
Manufacturing Maintenance	