



Butler Tech PLTW Biomedical Science Essential Skills Profile

This profile provides an outline of the skills required for the 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 PLTW Biomedical Science

Applied Mathematics - 5	Graphic Literacy - 5
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.
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
Scientific and Numerical Literacy	Using scientific rules and methods to investigate problems, organize and present data, analyze data, and communicate finding.

Abilities Required

Written Comprehension	The ability to read and understand information and ideas presented in writing. Ability to express scientific findings in written graphical formats.
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.

Knowledge Required in Healthcare Science

Biology	Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.
Medicine and Dentistry	Knowledge of the information and techniques needed to diagnose and treat human injuries, diseases, and deformities. This includes symptoms, treatment alternatives, drug properties and interactions, and preventive health-care measures.
English Language	Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.

PLTW Biomedical Science Activities

- Plan and direct studies to investigate human or animal disease, preventive methods, and treatments for disease.
- Follow strict safety procedures when handling toxic/hazardous materials to avoid contamination.
- Write and publish articles in scientific journals.
- Use equipment such as light microscopes, data collection sensors, micropipettors, thermal cyclers, and electrophoresis equipment.
- Prepare and analyze organ, tissue, and cell samples to identify toxicity, bacteria, or microorganisms or to study cellular structure.
- Standardize drug dosages, methods of immunization, and procedures for manufacture of drugs and medicinal compounds.
- Evaluate effects of drugs, gases, pesticides, parasites, and microorganisms at various levels. Investigate cause, progress, life cycle, and mode of transmission of diseases or microorganisms.
- Act as a clinician and diagnostician and consult with and advise physicians, educators, researchers, and others regarding medical applications of physics, biology, and chemistry.
- Teach principles of medicine and medical and laboratory procedures to physicians, residents, students, and technicians.
- Confer with health departments, industry personnel, physicians, and others to develop health safety standards and public health improvement programs.
- Collect patient history and test results to diagnose, treat, and prevent disease.

Technology

Operating system software	Object or component oriented development software
Database user interface and query software	Office Suite software
Analytical or scientific software and hardware	Use probes and data collection software to collect and analyze data.

Personality

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

Available Certifications

Six Sigma Yellow Belt	Phlebotomy
Six Sigma Green Belt	Pharmacy Technician

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	<p>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:</p> <ul style="list-style-type: none"> • 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
Articulated Credit	Butler Tech has agreements with certain colleges; if you attend one of those colleges you can get credit toward a specific degree.

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

Possible Career Pathways

Medical Laboratory Scientist	Scientist - Chemistry, Biology, Biochemistry, Microbiology, Pharmaceuticals, Pathophysiology, Anthropologist, Genetics
Pharmacist	
R&D Scientist, Engineer, or Technician	Nurse / Nurse Practitioner
Biomedical Engineer	Physician
Bioinformatics	Public Health
Genetic Counselor	Postsecondary science instructor & researcher
Epidemiologist	Medical Examiner / Coroner