

# Discover PLTW – BIOMEDICAL SCIENCES

### Industry Overview

Whether discovering new cancer treatments or teaching healthy lifestyle choices to their communities, today's biomedical science professionals are tackling big challenges to make the world a better place. PLTW Biomedical Science students are taking on these same real-world challenges — and they're doing it before they even graduate from high school. Working with the same tools used by professionals in hospitals and labs, students engage in compelling, hands-on activities and work together to find solutions to problems. Students at Edgewood High School are engaged in active classrooms which promote an interest in a highly engaging career pathway.

### Student Organization

Students enrolled in the Butler Tech PLTW Biomedical Science Program at Edgewood High School are eligible to participate in HOSA. HOSA is an international student organization that provides a unique program of leadership development, and motivation for students who possess interests in health, science and medicine. The mission of this organization is to develop skills and knowledge to prepare the next generation of health science professionals. Members are encouraged to learn and to develop the skills necessary to help them achieve future goals. As an active member of EHS HOSA, students will have the opportunity to participate, and to serve as a positive representative for our school, community & student organization through participation in activities such as:

- Annual HOSA service project
- EHS school blood drive
- Regional, state and international competitions
- Team and community building activities
- Volunteer opportunities

**bt** Butler  
Tech  
in Edgewood City  
Schools

### Coursework

- Biomedical Innovations
- Human Body Systems
- Medical Interventions
- Principles of Biomedical Sciences



"Biomed made school fun again. It's a great class packed with knowledge, that will give you a head start on your peers in other science classes!"



## Butler Tech Course Offerings at Edgewood

### Biomedical Innovations

PLTW Biomedical Innovation is a capstone course designed to give students the opportunity to design innovative solutions for the health challenges of the 21st century as they work through progressively challenging open-ended problems, addressing topics such as clinical medicine, physiology, biomedical engineering, and public health. They have the opportunity to work on an independent project and may work with a mentor or advisor from a university, hospital, physician's office, or industry. Throughout the course, students are expected to present their work to an adult audience that may include representatives from the local business and healthcare community.

### Medical Interventions

Students in Medical Interventions investigate a variety of interventions involved in the prevention, diagnosis and treatment of disease as they follow the lives of a fictitious family. The course is a "how-to" manual for maintaining overall health and homeostasis in the body as students explore how to prevent and fight infection; how to screen and evaluate the code in human DNA; how to prevent, diagnose and treat cancer; and how to prevail when the organs of the body begin to fail. These scenarios expose students to the wide range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics. Each family case scenario introduces multiple types of interventions and reinforces concepts learned in the previous two courses, as well as presenting new content.

Interventions may range from simple diagnostic tests to treatment of complex diseases and disorders. These interventions are showcased across generations of a family and provide a look at the past, present and future of biomedical sciences. Lifestyle choices and preventive measures are emphasized throughout the course, as are the important roles scientific thinking and engineering design play in the development of interventions of the future.

### Human Body Systems

In Human Body Systems, students engage in the study of the processes, structures, and interactions of the human body. Important concepts in the course include: communication, transport of substances, locomotion, metabolic processes, defense, and protection. The central theme is how the body systems work together to maintain homeostasis and good health. The systems are studied as "parts of a whole," working together to keep the amazing human machine functioning at an optimal level. Students design experiments, investigate the structures and functions of body systems, and use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary actions, and respiratory operation. Students work through interesting real-world cases and play the role of biomedical professionals to solve medical mysteries.

### Principles of Biomedical Sciences

Principles of Biomedical Sciences introduces the biomedical sciences through exciting hands-on projects and problems. Students investigate the human body systems and various health conditions including heart disease, diabetes, sickle-cell disease, hypercholesterolemia, and infectious diseases. They determine the factors that led to the death of a fictional person, and investigate lifestyle choices and medical treatments that might have prolonged the person's life. The activities and projects introduce students to human physiology, medicine, research processes and bioinformatics.

Key biological concepts including homeostasis, metabolism, inheritance of traits, and defense against disease are embedded in the curriculum. Engineering principles including the design process, feedback loops, and the relationship of structure to function are also incorporated. This course is designed to provide an overview of all the courses in the Biomedical Sciences program and lay the scientific foundation for subsequent courses. Students will develop management plans reflecting practices for care and legal compliance.

**Discover** PLTW –  
**BioMedical Sciences**  
**through Butler Tech and**  
**pursue a career that's**  
**right for you.**

Butler Tech connects high school students to career technical education in more ways than ever. Complete your traditional academic courses in your school and enhance your educational experience with career-focused labs and on-the-job training. Each moment in a Butler Tech career technical course is a step toward building your future.



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