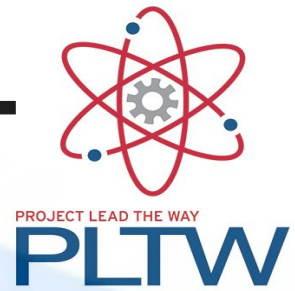




TUSTIN HIGH SCHOOL

BIOMEDICAL PATHWAY



What Is It?

The PLTW Biomedical Sciences Program is a sequence of four courses which follow the PLTW Engineering Program's proven hands-on, real-world, problem-solving approach to learning. Students explore the concepts of human medicine and are introduced to bioinformatics, including mapping and analyzing DNA. Through activities, like dissecting a heart, students examine the processes, structures and interactions of the human body - often playing the role of biomedical professionals to solve mysteries. Think CSI meets ER. They also explore the prevention, diagnosis and treatment of diseases working collaboratively to investigate and design innovative solutions for the health challenges of the 21st century such as fighting cancer with nanotechnology. *PLTW*

WHAT TO EXPECT?

"Biomedical helped with planning my future career and learning the basics of forensic science and biomedical science. Biomedical has been fun to learn about the crime of Anna's death and breaking down from a medical perspective." ~PBS Student

"I'd describe this biomedical pathway experience has a new challenge because everyday there is something new to learn. One class day, you may walk into a crime scene or you may walk into class and see a centrifuge spinning pretend blood." ~PBS Student

"Amazing hands-on working experiences. The way we learn is by doing hands-on labs instead of memorizing. It makes the class more fun and easier to learn by seeing how things work in the body and how it happens."
~HBS Student

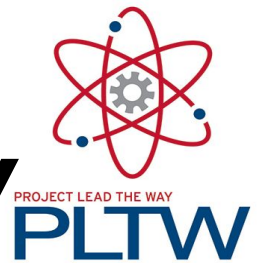
"I would say that this is one of the best programs Tustin High has to offer. I have learned so much and had a lot of hands on experience. There is never a day when you won't learn something new."
~HBS Student



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TUSTIN HIGH SCHOOL BIOMEDICAL PATHWAY



Pathway Curriculum

Principles of the Biomedical Sciences

PBS

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.

Human Body Systems

HBS

Students examine the interactions of body systems as they explore identity, communication, power, movement, protection and homeostasis. Students design experiments, investigate the structures and functions of the human body, and use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration. Exploring science in action, students build organs and tissues on a skeletal manikin, work through interesting real-world cases and often play the role of biomedical professionals to solve medical mysteries.

Medical Interventions

MI

Students 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 the 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.

Biomedical Innovation

BI

In this capstone course, students apply their knowledge and skills to answer questions or solve problems related to the biomedical sciences. Students 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.

