

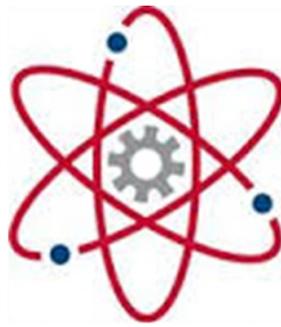
THE WORLD'S BIGGEST HEALTH CHALLENGES INVESTIGATED IN YOUR CLASSROOM

The rigorous and relevant four-course PLTW Biomedical Science Sequence allows students to investigate the roles of biomedical professionals as they study the concepts of human medicine, physiology, genetics, microbiology, and public health. Students engage in activities such as investigating the death of a fictional person to learn content in the context of real world cases. They examine the structures and interactions of human body systems and explore the prevention, diagnosis, and treatment of disease, all while working collaboratively to understand and design solutions to the most pressing health challenges of today and the future.

Each course in the Biomedical Science sequence builds on the skills and knowledge students gain in the preceding courses.

*****All PLTW courses receive an Honors Weighting *****

Upon completion of a PLTW course students may apply for college credit. Information/application about college credit is available at www.scp1tw.org. Please note that students must apply for the college credit within one year of completing the course. (Example: student that completed PLTW course during 2014-2015 school year must submit application by July 15, 2016.) Application deadline is July 15.



Spartanburg County School District 6
LEADING THE WAY K-12

PLTW

Igniting imagination and innovation through learning.

PLTW Biomedical Science Curriculum

Foundation Courses

PBS

Principles of Biomedical Science

1 Unit

Grades: 9-12

Prerequisite: Science Teacher's Recommendation

In the introductory course of the PLTW Biomedical Science program, students explore concepts of biology and medicine to determine factors that led to the death of a fictional person. While investigating the case, students examine autopsy reports, investigate medical history, and explore medical treatments that might have prolonged the person's life. The activities and projects introduce students to human physiology, basic biology, medicine, and research processes while allowing them to design their own experiments to solve problems.

HBS

Human Body Systems

1 Unit

Grades: 10-12

Prerequisite: Principles of Biomedical Science and PLTW teacher's recommendation

Students examine the interactions of human body systems as they explore identity, power, movement, protection, and homeostasis. Exploring science in action, students build organs and tissues on a skeletal Maniken®; use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration; and take on the roles of biomedical professionals to solve real-world medical cases.

MI

Medical Intervention

1 Unit

Grades: 10-12

Prerequisite: Principles of Biomedical Science, Human Body Systems and a PLTW teacher's recommendation

Students follow the life of a fictitious family as they investigate how to prevent, diagnose, and treat disease. Students explore how to detect and fight infection; screen and evaluate the code in human DNA; evaluate cancer treatment options; and prevail when the organs of the body begin to fail. Through real-world cases, students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics.

Capstone Course

BI

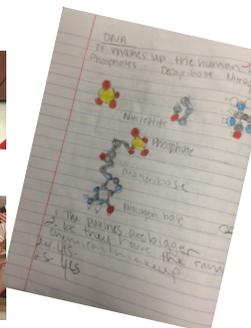
Biomedical Innovation

1 Unit

Grades: 11-12

Prerequisite: Medical Intervention and a PLTW teacher's recommendation

In the final course of the PLTW Biomedical Science sequence, students build on the knowledge and skills gained from previous courses to design innovative solutions for the most pressing health challenges of the 21st century. Students address topics ranging from public health and biomedical engineering to clinical medicine and physiology. They have the opportunity to work on an independent design project with a mentor or advisor from a university, medical facility, or research institution.



LET'S CHALLENGE OUR STUDENTS TO ENGINEER A BETTER WORLD

PLTW Engineering is about applying science, technology, engineering, and math through a project-based, hands-on approach, to solve complex, open-ended problems in a real-world context. Students focus on the process of defining and solving a problem, not on getting the "right" answer. They learn how to apply STEM knowledge, skills, and habits of mind to make the world a better place through innovation.

Capstone Course

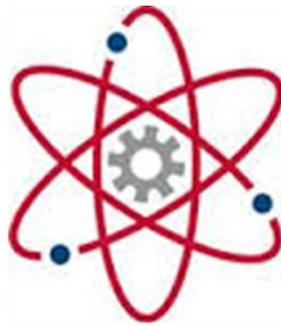
EDD**Engineering Design and Development****1 Unit Grades: 11-12**

Prerequisite: Math or Science teacher's recommendation

The knowledge and skills students acquire throughout PLTW Engineering come together in EDD as they identify an issue and then research, design, and test a solution, ultimately presenting their solution to a panel of engineers. Students apply the professional skills they have developed to document a design process to standards, completing EDD ready to take on any post-secondary program or career. While it is recommended that students take IED, POE, and at least one specialization course before attempting EDD, it is not a requirement at this time. Students applying for this course should be innovative thinkers and independent learners who are willing to persist until a problem is solved.

*****All PLTW courses receive an Honors Weighting *****

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PLTW Engineering Curriculum

Foundation Courses

IED**Introduction to Engineering Design****1 Unit****Grades: 9-12**

Prerequisite: Successful completion of Algebra I and teacher recommendation

Students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. They work both individually and in teams to design solutions to a variety of problems using 3D modeling software, and use an engineering notebook to document their work.

POE**Principles of Engineering****1 Unit****Grades: 10-12**

Prerequisite: Introduction to Engineering Design

Through problems that engage and challenge, students explore a broad range of engineering topics, including mechanisms, the strength of structures and materials, and automation. Students develop skills in problem solving, research, and design while learning strategies for design process documentation, collaboration, and presentation.

Specialization Courses

CSE**Computer Science and Software Engineering****1 Unit****Grades: 10-12**

Prerequisite: Math teacher's recommendation

Open doors in any career with computer science! In CSE, students create apps for mobile devices, automate tasks in a variety of languages, and find patterns in data. Students collaborate to create and present solutions that can improve people's lives, and weigh the ethical and societal issues of how computing and connectivity are changing the world.

CEA**Civil Engineering and Architecture****1 Unit****Grades: 10-12**

Prerequisite: Introduction to Engineering Design and Principles of Engineering

Students learn important aspects of building and site design and development. They apply math, science, and standard engineering practices to design both residential and commercial projects and document their work using 3D architecture design software.

CIM**Computer Integrated Manufacturing****1 Unit****Grades: 10-12**

Prerequisite: Introduction to Engineering Design and Principles of Engineering

Manufactured items are part of everyday life, yet most students have not been introduced to the high-tech, innovative nature of modern manufacturing. This course illuminates the opportunities related to understanding manufacturing. At the same time, it teaches students about manufacturing processes, product design, robotics, and automation. Students can earn a virtual manufacturing badge recognized by the National Manufacturing Badge system.

DE**Digital Electronics****1 Unit****Grades: 10-12**

Prerequisite: Introduction to Engineering Design and Principles of Engineering

From smart phones to appliances, digital circuits are all around us. This course provides a foundation for students who are interested in electrical engineering, electronics, or circuit design. Students study topics such as combinational and sequential logic and are exposed to circuit design tools used in industry, including logic gates, integrated circuits, and programmable logic devices.