

OPENING DOORS TO THE **FUTURE**



Science, Technology, Engineering, Mathematics Endorsement (STEM)

Engineering CTE Pathway (Requires: Algebra 2, Chemistry, AND Physics)

| Grade | Language Arts | Math | Science | Social Studies | Required CTE Courses | Potential Certification Opportunities |
|------------------|--|------------------------------------|---------------------------|---------------------------------|---|--|
| 9 th | English I | Algebra I | Biology | World History | *Principal of Applied Engineering (1 Credit) | Certification: 940 Autodest Associate (Certified User) Fusion 361 |
| 10 th | English II | Geometry | Chemistry | | * Manufacturing Engineering and Technology} (1 Credit) | |
| 11 th | English III | Algebra II | Physics | U.S. History | * Digital Electronics (1 Credit) | |
| 12 th | English IV OR Approved 4 th Year English | Approved 4 th Year Math | Approved 4th Year Science | Government AND Economics | *Engineering Science (1 Credit) | |

| Required Electives |
|---|
| *Business Information Management (1 Credit) *Professional Communication (.5 Credit) *Dollars and Sense (.5 Credit) |

| Sample Career Opportunities | High School | On the Job Training | Certificate | Associate's Degree | Bachelor's Degree | Advanced College Degree | Average Annual Salary | Possible Majors |
|-----------------------------|-------------|---------------------|-------------|--------------------|-------------------|-------------------------|-----------------------|--|
| Electrical Engineer | | | | | X | X | \$98,405 | *Electrical Engineer *Mechanical Engineer *Chemical Engineer |
| Mechanical Engineer | | | | | X | X | \$91,707 | |
| Chemical Engineer | | | | | X | X | \$112,819 | |
| Industrial Engineer | | | | | X | X | \$97,074 | |

OPENING DOORS TO THE **FUTURE**



STEM Endorsement ***Engineering CTE Pathway*** (Requires: Algebra 2, Chemistry, AND Physics)

Principles of Applied Engineering
TSDS PEIMS Code: 13036200 (PRAPPENG)
Grade Placement: 9–10

Credit: 1

GHS Section 2060
Available as a CTE Elective
Prerequisite: None.

Principles of Applied Engineering provides an overview of the various fields of science, technology, engineering, and mathematics and their interrelationships. Students will develop engineering communication skills, which include computer graphics, modeling, and presentations, by using a variety of computer hardware and software applications to complete assignments and projects. Upon completing this course, students will understand the various fields of engineering and will be able to make informed career decisions. Further, students will have worked on a design team to develop a product or system. Students will use multiple software applications to prepare and present course assignments.

Introduction to Engineering Design {PLTW}
TSDS PEIMS Code: N1303742
Grade Placement: 10–12

Credit: 1

GHS Section ____
Designated for Pathway Students
Prerequisites: None.

Students study the engineering design process, applying math, science, and engineering standards to identify and design solutions to a variety of real problems. They work both individually and in collaborative teams to identify, research, test, refine, develop, and communicate design solutions using industry practices, standards, and tools. Utilizing PLTW's activity-project-problem-based teaching and learning strategies students' progress from structured activities to complex projects that require detailed planning, documentation, and communication. The course's rigorous pace requires students to develop an engineering mindset. Students apply industry accepted technical communication skills in visual representation using industry-standard 3D design technology as well as professional and industry specific documentation processes. The development of computational methods in engineering problem solving, including statistical analysis and mathematical modeling are emphasized.

Digital Electronics
TSDS PEIMS Code: 13037600 (DIGELC)
Grade Placement: 10–12

Credit: 1

GHS Section 2075
Designated for Pathway Students
Prerequisites: Algebra I and Geometry.

Digital Electronics is the study of electronic circuits that are used to process and control digital signals. In contrast to analog electronics, where information is represented by a continuously varying voltage, digital signals are represented by two discrete voltages or logic levels. This distinction allows for greater signal speed and storage capabilities and has revolutionized the world of electronics. Digital electronics is the foundation of modern electronic devices such as cellular phones, digital audio players, laptop computers, digital cameras, and high-definition televisions. The primary focus of Digital Electronics is to expose students to the design process of combinational and sequential logic design, teamwork, communication methods, engineering standards, and technical documentation.
Note: This course satisfies a math credit requirement for students on the Foundation High School Program.

OPENING DOORS TO THE **FUTURE**



STEM Endorsement

Engineering CTE Pathway

(Requires: Algebra 2, Chemistry, **AND** Physics)

Engineering Science

TSDS PEIMS Code: 13037500

Grade Placement: 10–12

Credit: 1

GHS Section 2061

Designated for Pathway Students

Prerequisites: Algebra I and Biology,
Chemistry, IPC or Physics.

Engineering Science is an engineering course designed to expose students to some of the major concepts and technologies that they will encounter in a postsecondary program of study in any engineering domain. Students will have an opportunity to investigate engineering and high-tech careers. In Engineering Science, students will employ science, technology, engineering, and mathematical concepts in the solution of real-world challenge situations. Students will develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges. Students will also learn how to document their work and communicate their solutions to their peers and members of the professional community.

Note: This course satisfies a science credit requirement for students on the Foundation High School Program