

Engineering

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Introduction to Engineering Design (Project Lead the Way 1)

Prerequisite: None
Grades: 10-12
Credit: 1 unit
Offered: Career Center, Indian Land

You'll use computer software and math/physics concepts to produce, analyze and evaluate project models in this first course in the PLW series.

You'll study form and function design concepts - then use state-of-the-art technology to translate conceptual design into reproducible products.

After this course, you'll understand how to apply the design process to solve problems in an individual and team setting. You'll develop portfolios to display your designs and present them properly to peers, instructors and professionals.

Principles of Engineering (Project Lead the Way 2)

Prerequisite: Introduction to Engineering Design (Project Lead the Way 1)
Grades: 10-12
Credit: 1 unit

Offered: Career Center, Indian Land
In this PLW course, you'll get an overview of engineering and engineering technology as you develop problem-solving skills by tackling real-world engineering problems.

You'll learn theory, get hands-on experiences and explore social and psychological consequences of technological changes.

Civil Engineering (Project Lead the Way 3)

Prerequisite: Principles of Engineering (Project Lead the Way 2)
Grades: 10-12
Credit: 1 unit
Offered: Indian Land

You'll learn important aspects of building and site design and development.

You'll apply math, science and standard engineering practices to design both residential and commercial projects and document your work using 3-D design software.

Engineering - Digital Electronics (Project Lead the Way 3)

Prerequisite: Principles of Engineering (Project Lead the Way 2)
Grades: 11-12
Credit: 1 unit
Offered: Career Center

In this PLW course, you'll be introduced to applied digital logic, a key element of careers in engineering and engineering technology.

You'll explore the circuitry found in watches, calculators, video games and computers.

You'll also test and analyze digital circuitry, design circuits, and use the computer to generate printed circuit boards as you use math and science to solve real-world engineering problems.

Aerospace Engineering (Project Lead the Way 4)

Prerequisites: Introduction to Engineering Design; Principles of Engineering; Digital Electronics or Civil Engineering
Grades: 11-12
Credit: 1 unit
Offered: Career Center, Indian Land

In this fourth PLW class, you'll learn about aeronautics and aerospace systems including airfoil design, propulsion systems, aerodynamics, flight controls and rocketry and orbital

mechanics.

You'll also explore life support and environmental systems, microgravity environments, composite material fabrication and testing, and unmanned intelligent vehicles. Successfully completing this course will make you a completer in the engineering program.

PLTW Computer Integrated Manufacturing

Prerequisites: PLTW Intro to Engr Design, PLTW Principles of Engineering
Grades: 11-12
Credit: 1 unit
Offered: Career Center

You'll learn the methods used to control machines and the impact technology has on the workforce in the 21st century.

You'll study the principles of manufacturing, manufacturing processes, elements of automation and integration of manufacturing.

Mechatronics Integrated Technologies 1

Prerequisite: None
Grades: 10-11
Credit: 1
Offered: Career Center

You'll cover the basic safety, tools, precision measurement and basic electrical skills during this course.

You'll be prepared to work with your hands as well as yours minds in the mechatronics program.

Mechatronics is a new interdisciplinary field involving mechanical, instrumentation, electronics, robotics/automation, computer components and control systems.

Mechatronics is a dynamic field that changes daily with the rapid improvements in technology and computer systems.

Mechatronics is the combination of the terms mechanical (mecha for mechanisms, i.e., machines that move) and electronics. The word reflects the basic nature of this field, to integrate electrical and mechanical systems in a single device.

Mechatronics is the junction where concepts from mechanical engineering, electrical engineering and computer science merge to design, build and operate products.

Mechatronics Integrated Technologies 2

Prerequisite: Mechatronics Integrated Technologies 1
Grades 10-11
Credit: 1
Offered: Career Center

You'll cover advanced electrical skills, pneumatic and hydraulic systems in this second course.

Mechatronics Integrated Technologies 3

Prerequisite: Mechatronics Integrated Technologies 2
Grades 11-12
Credit: 1
Offered: Career Center

You'll cover motor and mechanical drives and be introduced to the process automation using programmable logic controllers in this third course.

Mechatronics Integrated Technologies 4

Prerequisite: Mechatronics Integrated Technologies 3
Grades 11-12
Credit: 1
Offered: Career Center

You'll cover advanced automation control and the integration of robotics in this fourth course.