

# PROJECT LEAD THE WAY (PLW)

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## PLW 100 (4 credit hours)

### Introduction to Engineering Design

Provides an introduction to the engineering profession, engineering disciplines, and technology. Emphasizes a "problem-solving" approach, engineering design process, and team projects. Lecture/Lab: 4.0 credits (150 contact hours).

**Attributes:** Technical

**Components:** LEC: Lecture

## PLW 125 (4 credit hours)

### Principles of Engineering

Students will be introduced to various types of engineering, engineering communications, various design processes, types of engineering systems, statics, materials, and strength of materials, engineering for reliability, and kinematics. Lecture/Lab: 4.0 credits (150 contact hours).

**Pre-requisite:** PLW 100.

**Attributes:** Technical

**Components:** LEC: Lecture

## PLW 130 (4 credit hours)

### Principles of Biomedical Sciences

Engages students in the study of human medicine, research processes and an introduction to bioinformatics. Exposes students to investigations of human body systems and various health conditions including heart disease, diabetes, sickle-cell disease, hypercholesterolemia, and infectious diseases. Includes analysis of key biological concepts including: homeostasis, metabolism, inheritance of traits, feedback systems, the relationship of structure to function and defense against disease. Outlines all the courses in the Biomedical Sciences' program and to lay the scientific foundation necessary for student success in the subsequent courses. Lecture/Lab: 4.0 credits (150 contact hours).

**Pre-requisite:** Reading, English, and Mathematics assessment exam scores above the KCTCS transitional placement level or successful completion of the prescribed transitional course(s).

**Attributes:** Technical

**Components:** LEC: Lecture

## PLW 135 (4 credit hours)

### Principles of Human Body Systems

Emphasizes the study of human body systems investigating identity, communication, power, movement, protection, and homeostasis. Uses experiments that investigate the structures and functions of the human body and uses data acquisition software to monitor body functions. Explores science in action as students build organs and tissues on a skeletal model, work through real-world cases, and role-play biomedical professionals to solve medical mysteries. Lecture/Lab: 4.0 credits (150 contact hours).

**Pre-requisite:** PLW 130.

**Attributes:** Technical

**Components:** LEC: Lecture

## PLW 140 (4 credit hours)

### Medical Interventions

Focuses on exploring a variety of interventions involved in the prevention, diagnosis and treatment of disease. Uses a How-To manual to introduce prevention of and fighting of 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. Examines lifestyle choices and preventive measures that influence health and highlights the important roles scientific thinking and engineering design play in the development of interventions of the future are examined. Lecture: 4.0 credits (150 contact hours).

**Pre-requisite:** PLW 135.

**Attributes:** Technical

**Components:** LEC: Lecture

## PLW 145 (4 credit hours)

### Biomedical Innovation

Leads students to apply their knowledge and skills to answer questions or solve problems related to the biomedical sciences in a capstone course. Facilitates student design of innovative solutions for the health challenges of the 21st century in areas such as clinical medicine, physiology, biomedical engineering, and public health. Provides the opportunity to work on an independent project with a mentor, or advisor from a university, hospital, physician's office, or health industry provider. Students present their work to an adult audience including representatives from the local business and healthcare community. Lecture/Lab: 4 credits (150 contact hours).

**Pre-requisite:** PLW 140.

**Attributes:** Technical

**Components:** LEC: Lecture

## PLW 150 (4 credit hours)

### Digital Electronics

This course uses computer simulations and hands on laboratory to teach students about the logic of electronics as they design, test, and construct electronic circuits and devices. Lecture: 1 credit (15 contact hours). Lab: 3 credits (45 contact hours).

**Attributes:** Technical

**Components:** LAB: Laboratory, LEC: Lecture

## PLW 200 (4 credit hours)

### Aerospace Engineering

The major focus of the Aerospace Engineering™ (AE) course is to expose students to the world of aeronautics, flight, and engineering. They will employ engineering and scientific concepts in the solution of aerospace problems. Lecture/Lab: 4.0 credits (150 contact hours).

**Pre-requisite:** PLW-100, PLW-125, and PLW-150.

**Components:** LEC: Lecture

## PLW 225 (4 credit hours)

### Civil Engineering and Architecture

The major focus of the Civil Engineering and Architecture™ (CEA) course is a long-term project that involves the development of a local property site. As students learn about various aspects of civil engineering and architecture, they apply what they learn to the design and development of this property. Lecture/Lab: 4.0 credits (150 contact hours).

**Pre-requisite:** PLW-100, PLW-125, and PLW-150.

**Attributes:** Technical

**Components:** LEC: Lecture

**PLW 250 (4 credit hours)**

**Computer Integrated Manufacturing**

The purpose of the Computer Integrated Manufacturing course is to expose students to the fundamentals of computerized manufacturing technology. The course includes: Computer Modeling; CNC Equipment; CAM Software; Robotics; and Flexible Manufacturing Systems. Lecture/Lab: 4.0 credits (150 contact hours).

**Pre-requisite:** PLW-100, PLW-125, and PLW-150.

**Components:** LEC: Lecture

**PLW 295 (4 credit hours)**

**Engineering Design and Development**

Engineering student teams research, design, and construct a solution to open-ended engineering problem using product development lifecycle and the design process; presentation to defend solutions to a panel of outside reviewers. Lecture/Lab: 4.0 credits (150 contact hours).

**Pre-requisite:** PLW 150 AND one of the following: PLW 200, OR PLW 225, OR PLW 250, OR Consent of the APC and/or Instructor.

**Components:** LEC: Lecture