



## **Engineering**

The High School Engineering Pathway utilizes the Project Lead the Way (PLTW) curriculum to provide students with the knowledge, skills, and experiences needed to explore careers in engineering and related STEM fields. Through a combination of classroom instruction, hands-on projects, and problem-based learning, students develop strong foundations in math, science, and technology while applying engineering design processes to real-world challenges.

**Locations: International High School and Paterson STEAM High School**

## **Courses**

### **Introduction to Engineering Design (Grade 10)**

Introduction to Engineering Design (IED) is a high school engineering course in the PLTW Engineering Program. In IED, students explore engineering tools and apply a common approach to the solution of engineering problems, an engineering design process. Utilizing the activity-project-problem-based (APB) teaching and learning pedagogy, students progress from completing structured activities to solving open-ended projects and problems that require them to plan, document, communicate, and develop other professional skills.

### **Principles of Engineering (Grade 11)**

Principles of Engineering is a full-year course designed to be a high school student's second exposure to the PLTW Engineering program and is appropriate for students in grades 9-12. In Principles of Engineering, students explore a broad range of engineering disciplines and careers and design and solve real-world engineering problems. This course introduces students to engineering concepts that are applicable to a variety of engineering disciplines and empowers them to develop technical skills through the use of engineering tools such as 3-D modeling software, hands-on prototyping equipment, programming software, and robotics hardware to bring their solutions to life. Students apply the engineering design process to solve real-world

problems across a breadth of engineering fields such as mechanical, robotics, infrastructure, environmental sustainability, and product design and development.

## **Civil Engineering and Architecture (Grade 12) at International HS**

Civil Engineering and Architecture (CEA) is a high school-level specialization course in the PLTW Engineering Program. In CEA students are introduced to 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 architectural design software. Utilizing the activity-project-problem-based (APB) teaching and learning pedagogy, students will progress from completing structured activities to solving openended projects and problems that require them to develop planning, documentation, communication, and other professional skills.

### **Skills Gained**

- Critical thinking and analytical reasoning
- Creativity and innovation through design challenges
- Technical proficiency in CAD, robotics, and engineering tools
- Collaboration and leadership in team projects
- Application of math and science concepts to engineering problems

### **Dual Enrollment Credit**

University of New Haven

### **Careers**

*Design Engineer, CAD Engineer, Mechanical Engineer, Aerospace Engineer, Civil Engineer, Mechanical Engineer, Civil Engineer, Electrical Engineer, Aerospace Engineer, Biomedical Engineer, Robotics, Architect, Urban Planner, Structural Engineer, Transportation Engineer*