

ENGINEERING & TECHNOLOGY (& PLTW)

Fishers High School has aligned with a national engineering training program entitled **Project Lead the Way**. This program will combine curriculum from mathematics, science, and technology to prepare students for college level engineering coursework. Instructors for Project Lead the Way courses have received training from engineering specialists at Purdue University. Upon successful completion of the end of course exam and an optional processing fee, college credit is available at over 30 schools across the United States. Project Lead the Way is a four year comprehensive pre-engineering program. More information can be obtained by visiting the national **Project Lead The Way** website at <https://www.pltw.org/>

Students are expected to follow a college preparatory sequence of courses in high school mathematics as well as completion of physics. To enter the program as a freshman, students are required to have taken Algebra 1.

FOUNDATIONAL PLTW COURSES

4802 CTE ENGINEERING TECH: INTRODUCTION TO ENGINEERING DESIGN (PLTW) (9, 10, 11, 12) This course is the first level in all course sequences in technology education. This Project Lead The Way course develops student problem-solving skills using a design development process. Models of product solutions are created, analyzed, and communicated using solid modeling computer design software. **Requirement: Successful completion of Algebra 1. Recommendation: At least a "B" average in Algebra 1**

5644 CTE ENGINEERING TECH: PRINCIPLES OF ENGINEERING (PLTW) (10, 11, 12) This PLTW course helps students understand the field of engineering/engineering technology by exploring various technology systems and manufacturing processes. Students learn how engineers and technicians use math, science and technology in an engineering problem solving process to benefit people. The course also includes concerns about social and political consequences of technological change. **Requirement: Introduction to Engineering Design or permission from the instructor. Recommendation: Completion of Intro to Engineering Design with a "B" average or better.**

ELECTIVE ENGINEERING COURSES

5538 # CTE ENGINEERING TECH: DIGITAL ELECTRONICS (PLTW) (11, 12) This PLTW course is a course in applied logic that encompasses the application of electronic circuits and devices. Computer simulation software is used to design and test digital circuitry prior to the actual construction of circuits and devices. **Requirement: Principles of Engineering or permission of the instructor. Recommendation: Completion of Principles of Engineering with a "B" average or better or completion or concurrent enrollment in any level of physics.**

4728 CTE ENGINEERING TECH: ROBOTICS DESIGN AND INNOVATION (RDI) (10,11,12) This course guides students to design, program, and test innovative technological designs related to robotic systems. Topics involve mechanics, pneumatics, control technologies, computer fundamentals, and programmable control technologies. Students design, build, and optimize robots to perform a variety of pre-designated tasks. Individuals or small teams may choose to participate in organized robotic competitions or develop their own events during the course. Through this course, students will investigate exciting career and collegiate programs of study. **Recommendation: Completion of Intro to Engineering Design with a "B" average or better.**

* 1-semester course ** can be taken 1 or 2 semesters # single-weighted course ## double-weighted course

THE FOLLOWING COURSES ARE OFFERED AT HSE ONLY

5650 # CTE ENGINEERING TECH: CIVIL ENGINEERING AND ARCHITECTURE (PLTW) (11, 12) This PLTW course provides an overview of the fields of Civil Engineering and Architecture, while emphasizing the interrelationship and dependence of both fields on each other. Students use state of the art software to solve real world problems and communicate solutions to hands-on projects and activities. **Requirement: Principles of Engineering or permission of the instructor. Recommendation: Completion of Principles of Engineering with a "C" average or better.**

5518 # CTE ENGINEERING TECH: AEROSPACE ENGINEERING (PLTW) (11, 12) Through hands-on engineering projects developed with NASA, students learn about aerodynamics, astronautics, space-life sciences, and systems engineering (which includes the study of intelligent vehicles like the Mars rovers Spirit and Opportunity). **Requirement: Principles of Engineering or permission from the instructor, Recommendation: Completion of Principles of Engineering with a "C" average or better.**

5534 # CTE ENGINEERING TECH: COMPUTER INTEGRATED MANUFACTURING (PLTW) (11, 12) This Project Lead The Way course applies principles of rapid prototyping, robotics, and automation. Students use CNC equipment to produce actual models of their three-dimensional designs. Fundamental concepts of robotics used in automated manufacturing and design analysis are included. **Requirement: Completion of Principles of Engineering or permission from the instructor. Recommendation: Completion of all PLTW courses with a "C" average or better.**

5698 # CTE ENGINEERING TECH: ENGINEERING DESIGN AND DEVELOPMENT (PLTW) (12) This Project Lead The Way course is an engineering research course in which students work in teams to research, design and construct a solution to an open-ended engineering problem. Students apply principles developed in the four preceding courses and are guided by a community mentor. They must present progress reports, submit a final written report and defend their solutions to a panel of outside reviewers at the end of the school year. **Requirement: successful completion of PLTW foundational courses and one PLTW elective course. Recommendation: Completion of all PLTW courses with a "C" average or better.**