
ENGINEERING AND TECHNOLOGY- PROJECT LEAD THE WAY

Hamilton Southeastern 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 that is made up of

Foundational courses:

- Introduction to Engineering Design – First Year
- Principles of Engineering – Second Year

Elective courses: (to be taken in the third or fourth year) (Honors weighted)

- Digital Electronics (HSE), Computer Integrated Manufacturing (HSE), Bio Engineering (HSE), Civil Engineering and Architecture (HSE), Aerospace (FHS)

Capstone course: (to be taken in the fourth year) (Honors weighted)

- Engineering Design and Development

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.

More information can be obtained by visiting the national **Project Lead The Way** website at www.pltw.org.

4812 INTRODUCTION TO ENGINEERING DESIGN (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**

4814 PRINCIPLES OF ENGINEERING (10, 11, 12) This Project Lead The Way 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: successful completion of Introduction to Engineering Design or permission from the instructor. Recommendation: at least a “C” average in Introduction to Engineering Design.**

5538 #DIGITAL ELECTRONICS (11, 12) This Project Lead The Way 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: successful completion of Principles of Engineering or permission from the instructor. Recommendation: at least a “C” average in Principles of Engineering.**

4810 #COMPUTER INTEGRATED MANUFACTURING (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 – successful completion of Principles of Engineering or permission from the instructor. Recommendation: a “C” average or better in all previous PLTW classes**

4820 #CIVIL ENGINEERING AND ARCHITECTURE (11, 12) This Project Lead The Way course provides an overview of the fields of the 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 – successful completion of Principles of Engineering or permission from the instructor. Recommendation: a “C” average or better in all previous PLTW classes.**

4816 #AEROSPACE ENGINEERING (11,12) Through hands-on engineering projects developed with NASA, students learn about aerodynamics, astronautics, space-life sciences, and systems engineering in this Project Lead The Way class (which includes the study of intelligent vehicles like the Mars rovers Spirit and Opportunity). **This course is only offered at Fishers High School. Students interested in taking this course will need to take a study hall/travel period. Requirement – successful completion of Principles of Engineering or permission from the instructor. Recommendation: a “C” average or better in all previous PLTW classes**

5644 #ENGINEERING DESIGN AND DEVELOPMENT (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 five 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: a “C” average or better in all previous PLTW courses, or permission from the instructor.**

**Sample schedule for student completing all four years of the
PLTW pre-engineering program**

Freshman Year

ENGLISH	FINE ART OR WORLD LANG
GEOMETRY OR ALGEBRA II	PE/INTRO TO COMP SCI
HONORS BIOLOGY	PLTW (IED)
WORLD CREDIT	

Sophomore Year

ENGLISH	FINE ART OR WORLD LANG
ALGEBRA II OR PRE-CALC/TRIG	HEALTH/WEB DESIGN I
HONORS CHEM	PLTW (POE)
ELECTIVE	

Junior Year

ENGLISH	PLTW ELECTIVE
PRE-CALC/TRIG OR AP CALCULUS	ELECTIVE
US HISTORY	ELECTIVE
PHYSICS	

Senior Year

ENGLISH	PLTW (EDD)
GOVERNMENT / ECONOMICS	PLTW ELECTIVE
AP CALCULUS OR ADV MATH	ELECTIVE
AP PHYSICS or AP CHEM	