American Heritage School

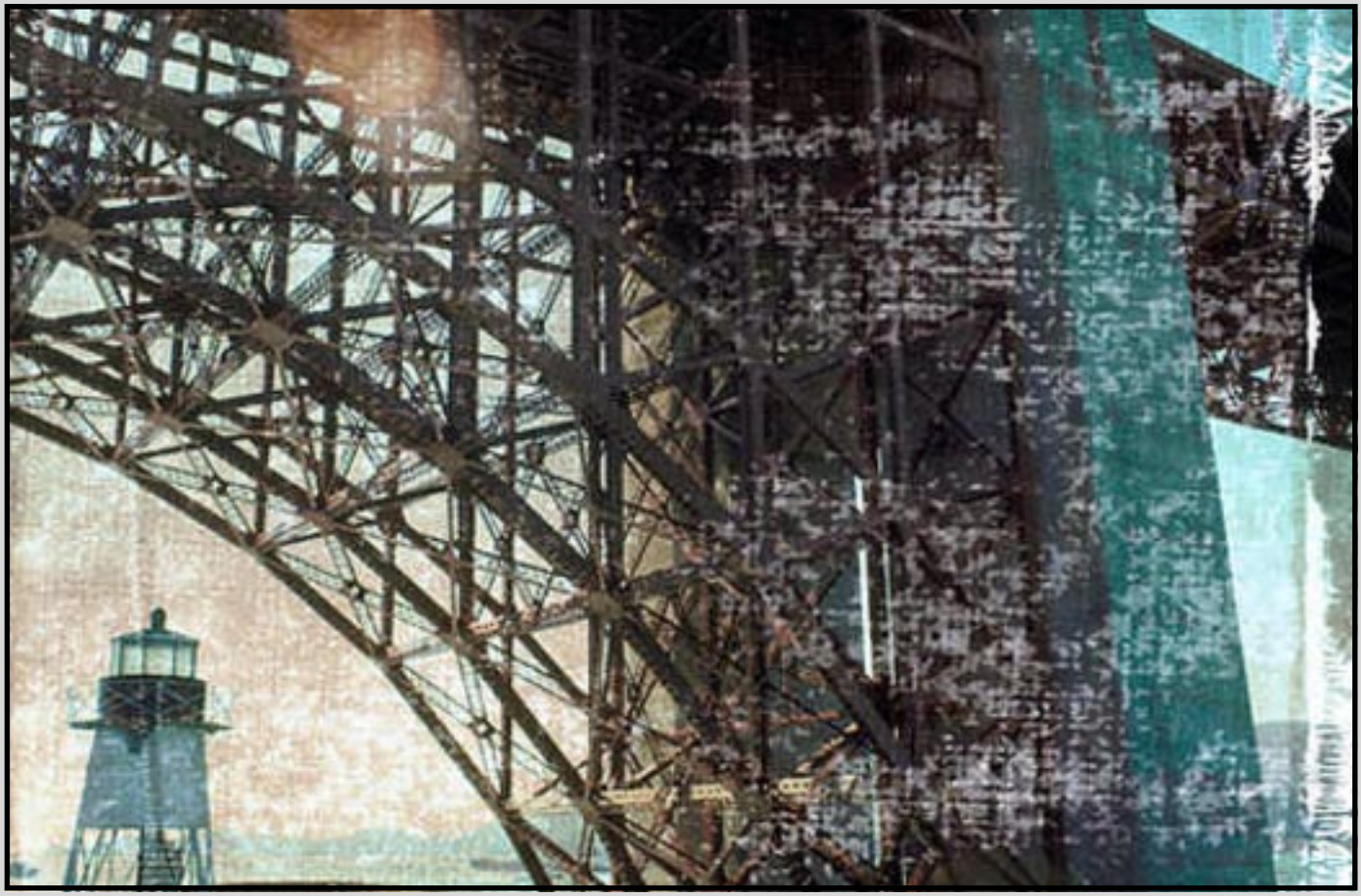
Honors Engineering Program

American Heritage School introduces the Honors Engineering Program for students who wish to prepare for a career in one of the many fields of engineering.

From ninth through twelfth grades, students follow a course of study designed to equip them for college with engineering, math, science and computer courses unique to a high school program. While satisfying requirements in all of the standard subject areas, students in the Honors Engineering Program are offered these courses:

- Principles of Engineering
- Introduction to Engineering Design
- Digital Electronics
- Engineering Design and Development

In addition, seniors who complete the engineering course of study serve an internship in their senior year with professionals in their field of interest.



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PRE-ENGINEERING CURRICULUM

Engineering Courses-
- Principles of Engineering
- Introduction to Engineering Design
- Digital Electronics
- Engineering Design and Development
- Engineering Internship

Additional Courses Required
- Architecture Design I
- Architecture Design II
- Physics

SUGGESTED SCHEDULE

9th Grade:
Honors Geometry/Honors Algebra II
English I (College Prep or Honors)
World Geography (College Prep or Honors)
Foreign Language
College Prep or Honors Biology or
Honors Physical Science (if not taken previously)
Honors Principles of Engineering
Elective

10th Grade:
Honors Algebra II/Honors Pre-Calculus
English II (College Prep or Honors)
World History (College Prep or Honors)
Foreign Language
Honors Chemistry/Biology (College Prep)
Honors Introduction to Engineering Design
Architecture Design I

11th Grade:
Honors Pre-Calculus/Honors Calculus
English III (College Prep, Honors or AP)
American History (College Prep, Honors or AP)
Physics (College Prep or Honors)/Honors Chemistry

Honors Digital Electronics
Architecture Design II
Elective

12th Grade:
Honors Calculus/Calculus AB
English IV (College Prep, Honors or AP)
Government/Economics (College Prep, Honors or AP)
Honors Engineering Design and Development
Engineering Internship
Physics (College Prep or Honors) (if not taken in grade 11)

COURSE DESCRIPTIONS

Principles of Engineering

This introductory course explores the wide variety of careers in engineering and technology and covers various technology systems and manufacturing processes. Using activities, projects and problems, students learn first hand how engineers and technicians use math, science and technology in an engineering problem solving process to benefit people. The course also addresses concerns about social and political consequences of technological change.

Introduction to Engineering Design

Students use a problem-solving model to improve existing products and invent new ones. They learn how to apply this model to solve problems in and out of the classroom. Using sophisticated, three-dimensional modeling software, students communicate the details of the products. Emphasis is placed on analyzing potential solutions and communicating ideas to others.

Digital Electronics

This course in applied logic encompasses the application of electronic circuits and devices. Students use computer simulation software to design and test digital circuitry prior to the actual construction of circuits and devices.

Engineering Design and Development

In this capstone course, teams of students spend the year solving problems of their own choosing. The teams apply principles developed in the four preceding PLTW core courses and are guided by a community mentor. They brainstorm possibilities, research current patents and regulations, construct a working model, test the model in real life situations (or simulation), document their designs and present and defend the design to a panel of experts.

Engineering Internship

To give students additional exposure to the engineering profession, an internship is to be completed during the last semester of the senior year. The required internship includes observations of engineers in their own work environments. Students have the opportunity to intern in a variety of engineering professions including electrical, mechanical, aeronautical and environmental.

The purpose of the internship is to give students a realistic view of the profession and help them to determine their own career choices. One-half credit is earned through successful completion of the internship. Students are given supplementary assignments and are supervised by an advisor in the Honors Engineering Program.