Engineering & Technology

Engineer Your World I

1 Full Year *1 Credit Hour* *Grades: 10, 11, 12* *Prerequisite: 83% or better in all previous science and math courses; Geometry (pre or co-requisite); and permission of instructor.*

Elective

This course is designed for the student who plans or is thinking of pursuing Engineering in college. Dual-enrollment is offered through the University of Texas – Austin. Students will discover an engineering design process in a project-based environment and be exposed to a variety of engineering disciplines by engaging in socially relevant design challenges. Disciplines include, but are not limited to, chemical engineering, computer engineering, and aeronautical engineering. Projects will cover aspects of the engineering design process such as reviewing customer needs, working with data, and reverse engineering. Projects will use technology such as software programs, sensors, and microcontrollers.

Engineer Your World II

1 Full Year *1 Credit Hour* *Grades: 11, 12* *Prerequisite: 83% or better in all previous science and math courses; Geometry (pre or co-requisite); and permission of instructor.*

Elective

This course is designed for the student who plans or is thinking of pursuing Engineering in college. Dual-enrollment is offered through the University of Texas – Austin. Students will utilize the design process discovered in EYW I in a project-based environment to engage with more socially relevant design challenges. All projects will require programming Raspberry Pis using the Python programming language. Project scenarios include an autonomous robot delivering supplies in a hospital and motion capture to gauge the effectiveness of a physical therapy regime.

AP Computer Science Principles

1 Full Year *1 Credit Hour* *Grades: 11, 12* *Prerequisite: 83% or better in all previous science and math courses; Algebra I (pre or co-requisite); and permission of instructor.*

Elective

This course is for students who plan on or are thinking of majoring in a STEM field in college and focuses on development of computer program and logic. Students are required to take the AP exam. Students will learn creative problem solving; how to apply computational processes to analyze big data, programming; how the internet works; how we innovation can span across fields; and the impact on society of computing innovations. Programming will be completed using both a text based and visual development environments. This is a different class and offers different college credit than AP Computer Science A.

AP Computer Science A

1 Full Year *1 Credit Hour* *Grades: 11, 12* *Prerequisite: 83% or better in all previous science and math courses; Algebra I (pre or co-requisite); and permission of instructor.*

Elective

This course is for students who plan on or are thinking of majoring in computer science in college and focuses of coding. Students are required to take the AP exam. Students will learn and expand their skills in coding by analyzing, writing, and testing programs as concepts are explored. Topics include data organization and algorithmic thinking. Students will utilize the Java programming language. This is a different class and offers different college credit than AP Computer Science Principals.

Explorations in Computer Science Programming

1 Semester *½ Credit Hour* *Grades: 9, 10, 11, 12* *Prerequisite: 83% or better in all previous science and math courses and permission of instructor.*

Elective

This course is designed for the student who plans or is thinking of pursuing Engineering or Computer Science in college. Students will study the use of the Python programming language to complete a semester long project. This project will include creative writing.

Introduction to Electrical Engineering

1 Semester *½ Credit Hour* *Grade: 12* *Prerequisite: 83% or better in all previous science and math courses and permission of instructor.*

Elective

This course is designed for the student who plans or is thinking of pursuing Engineering or Computer Science in college. Students will learn about the components and low-level programming of a computer. The design, building, and analysis of circuits will be explored. Students will program Arduinos, Raspberry Pis, and other single board components as well as connect them to sensors.

Introduction to Engineering Prototyping

1 Semester *½ Credit Hour* *Grades: 10, 11, 12* *Prerequisite: 83% or better in all previous science and math courses and permission of instructor.*

Elective

This course is designed for the student who plans or is thinking of pursuing Engineering in college. The course will cover engineering graphics starting with drafting by hand and progressing to 3D modeling using a computer and an industry standard program. Models will then be processed and prototyped using a 3D printer. The science of materials will also be covered in regard to the choice of printer filaments.