

**Program of Studies Changes
2015-2016**

TECH ED

Engineering Design and Development

Proposed Changes: Prerequisite. Currently requires any 2 of the following courses: Foundations of Technology II, Principles of Engineering, and Manufacturing Technology. We would like to change the prerequisite to require Principles of Engineering and either Foundations of Technology II or Manufacturing Technology.

Justification: With the introduction of more complex projects in the course that require the use of CAD and solid modeling to complete the projects, the projects can and do overwhelm students who do not take the Principles of Engineering course. By requiring the Principal of Engineering course, we can have move to a level base of CAD experience for all students taking the course and increase the scope of learning offered within the class.

Foundations of Technology II

Proposed Changes: Move from full year offering to semester based offering. Also move from 1 credit to .5 credit offering.

Justification: Course was originally designed as either a 1 or 2 semester long course. This change will narrow the scope of materials covered by students, however it would open up the class for more students to take. Students in 10-12th grade have requested more semester based course offerings to better fit their schedules, this move would allow more students to be exposed to STEM principles.

Robotic Systems

Proposed Changes: New, 3 day per cycle, 1 semester, .5 credit course based on the VEX robotics and ROBOTC programming systems.

Justification: We wish to offer this course to continue the progression of robotic systems used in STEM coursework that the Technology Education department has offered through its programs beginning at the Intermediate School. Students in 10-12th grade have requested more semester based course offerings to better fit their schedules, this move would allow more students to be exposed to STEM principles that are offered by the Technology Education department. Course objectives include:

- a) Identify, formulate solutions for, and solve engineering technology problems using engineering design processes
- b) Apply knowledge of mathematics, science and technology to solve robotic engineering technology problems
- c) Function on multi-disciplinary teams
- d) Communicate effectively using various forms of communications

- e) Recognize the need for, and demonstrate the ability to, engage in life-long learning
- f) Describe various methods used to manage and schedule projects
- g) Participate in and/or conduct design reviews
- h) Collect, analyze and interpret data

Course Description: The Robotics System course is built around the fundamental understanding of the systems that make up robots and the development of workplace competencies. The cornerstone of the class involves students collaboratively solving engineering design problems through the use of robotics and STEM principles. Students will be exposed to the VEX Robotics System as well as the ROBOTC programming environment.

Prerequisite: Foundations of Technology I

MATH

Honors Algebra II

Prerequisites: A minimum grade of A- in ALGEBRA I, and if taken, a minimum grade of A- in GEOMETRY.

(based on the data gathered from last years students)

This course is geared for the advanced level student in mathematics. Students will apply their prior algebraic knowledge to develop a more extensive understanding of additional topics. Topics covered in-depth include linear, quadratic, polynomial, radical, exponential, logarithmic and rational functions, and their graphs. Students will be introduced to matrices and determinants to aid in the solution of systems of equations with multiple variables; and periodic functions and trigonometry while utilizing the unit circle in degrees and radians. Topics in probability and statistics covering permutations, combinations and standard deviation will be investigated. A graphing calculator is required for this course. (TI-84 Plus or TI-Nspire are highly recommended)

Justification: This course will allow stronger math students to gain more in depth Algebra skills and help prepare them to take more advanced mathematics in high school and college.

Students looking to take Honors Pre-Calculus would need to achieve a B+ or better in Honors Algebra II.

Probability and Statistics

Prerequisites: C in Algebra II

This course introduces students to the basic concepts and logic of statistical reasoning, and gives the students introductory-level practical ability to choose, generate, and properly interpret appropriate descriptive and inferential statistical methods. In addition, the course helps students gain an appreciation for the diverse applications of statistics and its relevance to their lives and future fields of study. Fundamental and advanced topics including the counting principle, permutations,

combinations and the Central Limit Theorem will also be covered. A graphing calculator will be an integral part of this course. (TI-84 Plus or TI-Nspire are highly recommended)

Justification: This course would support the social sciences for conducting surveys, analyzing data, constructing, interpreting, and discussing graphical displays of data. These skills are valuable in many disciplines as well as life skills that will assist students in making more informed decisions throughout their lives. Due to the increased number of disciplines that require a statistics course in college, this course will help students gain a strong foundation in statistics.

AP Statistics

Prerequisite Change: B+ in Algebra II instead of a B+ in Pre-Calculus

Justification: Provide more students the opportunity to take an AP math course. AP Statistics is an Algebra based course, therefore Pre-Calculus skills are not necessary.

Students looking to take AP Statistics would need to achieve a B+ or better in Probability and Statistics.

BUSINESS

Web Page Design I

(Semester course) to replace Web Page Design (Full Year Course)

Course Description: This course is designed for those students who are interested in learning skills to develop web pages using HTML. Students will learn about the origins of the Internet and the World Wide Web, as well as planning, designing, producing, and maintaining a professional looking web site using a series of tutorials. Students will search for various types of web sites and analyze their structure and content. Design elements will include photos, clip art, and navigation practiced through mini-projects throughout the course. This course is designed for all students in traditional and technical pathways.

Justification: In order to provide more students the opportunity to take this course, making it a semester course allows students to pair it with another semester elective, taking up only a half of a slot in their schedule. If this course is successful and student interest is high, would look to run a Web Page Design II course as another semester elective.

SCIENCE

** See attached chart.

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