

# Ruskin High School

## Skills Needed for Pre-Engineering



### Academic Skills Needed (Minimum)

- Organization
- Note-taking
- Vocabulary
- Spelling
- Writing
- Science
  - Motion & forces, Structure & Properties of Matter, Interactions of Energy and Matter, Earth Science, Universe
- Computer Science
  - Word Processing, Power Point, Keyboarding
- Reading Minimum 8<sup>th</sup> Grade Level
- Math
  - Fractions, Percentages, Decimals, Number Sense & Algebraic Operations, Relations & Functions, Data Analysis & Statistics

### Behavioral Requirements

- Comes to class prepared
- Follow Written Directions
- Meet Deadlines
- Participate in Discussion
- Work Independently
- Work in Teams
- Follow Oral Instructions
- Punctuality
- Present

### Physical Requirements

- Eye/Hand Coordination
- Manual Dexterity
- Motor Skills (fine/gross)
- Hand Strength
- Confined Work Area
- Health Reaction (i.e. latex allergy, color blind, odor sensitivity)
- Sitting for long periods
- Standing for long periods
- Walking
- Bending
- Kneeling
- Squatting
- Reaching
- Pulling/Pushing
- Lifting



# Ruskin High School

## Pre-Engineering



### **Overview of Program**

Ruskin High School's College Prep Pre-Engineering Program, when combined with college preparatory mathematics and science courses in high school, introduces students to the scope, rigor and discipline of engineering and engineering technology prior to entering college. Students will work on teams to solve problems, collect and categorize data, keep engineer's notebooks, give oral presentations and use computer software to design parts and assemblies. They will work in high-tech laboratories equipped with robotics technology and sophisticated computer networks as they complete projects and activities designed to interconnect math and science to engineering applications. Completion of this challenging program will allow students to be better prepared for college engineering programs and more likely to be successful. Students must first take Introduction of Engineering in the 9<sup>th</sup> grade, then Principles of Engineering in the 10<sup>th</sup> grade. They will continue with specialty courses: digital Electronics, Civil Engineering and Architecture, Computer Integrated Manufacturing, Engineering Design and Development and Aerospace Engineering at the Pre-Engineering Academy their junior and senior years.

### **Introduction to Engineering Design (I.E.D.)**

This course emphasizes the development of a design. Students use computer software to produce, analyze, and evaluate models of project solutions. They study the design concepts of form and function and then use state-of-the art technology to translate conceptual design into reproducible products.

First Year 9<sup>th</sup> Grade Students

### **Principles of Engineering (P.O.E.)**

A hands-on course that helps students understand the field of engineering and engineering technology. Utilizing projects, modeling kits and computer students explore technology systems and engineering processes to find out how math, science and technology help people.

Second Year 10<sup>th</sup> Grade Students



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## Pre-Engineering Academy

### Pre-Calculus, Calculus, AP Calculus AB



#### **Juniors**

Juniors will have a 1 hour pull out Pre-Calculus class separate from the PLTW Pre-Engineering class both 1st and 2nd semester. The textbook is an approved edition and will be taught by an instructor who is highly qualified in mathematics. It is important to understand that it is up to the sending school district to grant this as a math credit and each student should verify this with his or her sending counselor.

#### **Seniors**

Seniors will have a 1 hour pull out Calculus class separate from the PLTW Pre-Engineering class both 1st and 2nd semester. The textbook is an approved edition and will be taught by an instructor who is highly qualified in mathematics. It is important to understand that it is up to the sending school district to grant this as a math credit and each student should verify this with his or her sending school counselor.

#### **Junior and Senior Option**

Any student has the option of Pre-Calculus, Calculus, AP Calculus AB class separate from the PLTW Pre-Engineering class both 1st and 2nd semester. Students will be assessed of their readiness, skill level, commitment and approval of the instructor. The textbook is an approved edition and will be taught by an instructor who is highly qualified in mathematics and College Board approved. It is important to understand that it is up to the sending school district to grant this as a math credit and each student should verify this with his or her sending school counselor.



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## Pre-Engineering Program



### 8<sup>th</sup> Grade Student Checklist 2013-2014 School Year

Name \_\_\_\_\_ Date \_\_\_\_\_

School \_\_\_\_\_

Algebra I/Geometry

Fall Semester Grade \_\_\_\_\_

Copy of Transcript Attached

Application

Completed form attached

Explore

Career Identifier \_\_\_\_\_

Copy of both sides attached

Gateway Program

Gateway Semester Grade \_\_\_\_\_

Copy of Transcript Attached

Counselor

Signature \_\_\_\_\_



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# Ruskin High School



## **Advisory Committee Role**

The specific purpose of an advisory committee at Ruskin High School is to advise, counsel, and assist in the planning, development and evaluation of our career and technology education programs. It is a necessary tool for interaction between the business community and the school system. Their function is to advise and assist in program planning, not to establish direct policy.

An advisory committee is organized to advise educators on the workplace. It is composed of a group of individuals primarily outside the educational field with specific occupational knowledge and expertise.

These committees are important to the establishment and maintenance of up-to-date education programs. Changes in technology, business, industry, and government have increased the need for effective communication between education and the world of workplace.

## **Advisory Committee Objectives**

The objectives of the advisory committees at Ruskin High School are:

1. To assist in setting objectives and recommend changes in instructional curriculum to best meet the needs of employers and students.
2. To assist with the identification of employment opportunities.
3. To assist instructors in the development of their technical skills and professional growth.
4. To assist in reviewing program facilities and recommend changes to better serve employers and students
5. To assist with the developments of work-based experiences for students.
6. To assist in making recommendations for equipment and instructional materials to meet the training needs of students.
7. To assist the instructor and students by providing occupational trends leading to student employment.
8. To assist in student organization activities (i.e. field trips, guest speakers, competition preparation).



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## Alliance for Engineering



### Program Goals

- Establishing cooperation between industry and higher education to create a dialogue in which training requirements and career opportunities are communicated to the schools and individuals.
- Ensuring student success by meeting students' educational needs and equipping them with necessary intellectual tools to compete in an ever-changing industrial/economic environment.
- Ensuring opportunities for transferability of engineering course credit.
- Creating opportunities for student internships, mentorships, apprenticeships, and other work/educational cooperatives.
- Sharing faculty, facilities, equipment, and resources to eliminate unnecessary duplication.
- Creating engineering awareness and education programs for elementary and secondary school students.
- Encouraging the engineering industry and government agencies to make state-of-the-art equipment and training aids available to schools, either as surplus or as donations.
- Developing scholarship, loan, and grant assistance programs for engineering candidates.
- Assisting and guiding underrepresented individuals and groups to enter the engineering field.

### Program Contact

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