



The Pre-Engineering Signature Program at Oakdale High School offers Frederick County high school students the opportunity to take a series of courses that will expose them to the fundamentals and principles of engineering on a level equal to their experience. Emphasis is placed on hands-on learning whereby students work at their own pace on stations covering various engineering disciplines, gradually mastering those skills required in order to complete a master project. Along with the Pre-Engineering classes, upper level math, science and IT courses are offered to prepare students for further study in a post high school setting. See the FCPS Course Guide or this site for required courses. Most Program completers will pursue additional educational opportunities, while others may proceed directly into the workforce.

Pre-Engineering Signature Program

Students who successfully complete Pre-Engineering 1 will be invited to become members of the Pre-Engineering Signature Program if they continue with Pre-Engineering 2. They will meet with the Program Coordinator to discuss long-term course scheduling and submit an application at that time.

The following courses are required in order to graduate from the Pre-Engineering Program:

- Pre-Engineering 1 *
- Pre-Engineering 2
- Pre-Engineering 3
- Pre-Calculus
- Physics (either Algebra Based Physics, Honors Physics, or AP Physics)
- 2 elective courses from upper level science, math, technology education, or informational technology courses. These courses must be approved for each student by the Pre-Engineering Program Advisory Board. See Program Coordinator for details.



In addition, it is highly recommended, but not required, that students planning on majoring in engineering in college complete calculus and a computer programming course prior to graduation.

* Pre-requisites are sophomore status and successful completion of either Foundations of Technology or Foundations of Computer Science, Algebra 1 and either Introduction to Chemistry and Physics (Class of 2016 -2019), Algebra-based Physics or Physics of Earth and Space (Class of 2020 and beyond).



FCPS/ FCC Articulation Agreement

Any student who completes all 3 Pre-Engineering courses with a 'B' or higher in each as well as Pre-Calculus will receive credit for EG 100 (Introductory Engineering Science) at FCC provided he or she takes another FCC class. It is possible that these credits could then be transferred to four-year universities as elective credits.



Pre-Engineering Courses

Pre-Engineering 1

- Students spend the first term working in pairs on a variety of trainers learning about a wide range of engineering topics.
- Students explore the various branches of engineering.
- Students apply the engineering process as they work collaboratively on a wide range of engineering tasks and competitions.
- During the second term, students use the engineering process and the knowledge gained on the stations to work on a long-term project (building a can-crusher machine) and presentation.

Pre-Engineering 2

- Students spend the first term working in pairs on a variety of trainers learning about a wide range of engineering topics.
- Students learn about vectors and elementary statics.
- During the second term, students use the engineering process and the knowledge gained on the stations to work on a long-term project (building a full scale, fully operational hovercraft) and presentation.

Pre-Engineering 3

- Students may continue to work on the various trainers, or they may work on a number of long-term projects and presentations. The engineering process is again heavily emphasized.

Trainers

- 3-D CAD and Printing
- Quality Control
- Electrical Control Systems
- Electrical Circuits
- Mechanical Drive Systems
- Hydraulic Systems
- Pneumatic Systems
- Structural Systems
- Manufacturing Engineering
- Residential Wiring
- Surveying
- Robotics



Transferring to OHS from Another School

Any student wishing to transfer to OHS in order to become a member of the Pre-Engineering Program must complete the pre-requisites mentioned above in his or her home school during their freshman year. The student may then apply for an Out of District transfer with the given commitment of applying to the Pre-Engineering Program at the end of the sophomore year. Out-of-district students are responsible for their own transportation to OHS.



For more information contact

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