

Engineering & Technology Pathway Course Descriptions

Engineering Drawing provides instruction in computer graphics and design fundamentals. Students will use CAD systems for two-dimensional drawing and three-dimensional modeling. Students will explore the wide range of CAD technologies and applications using software and equipment that meets the current industry standard. This course is strongly recommended for students aspiring to become engineers, architects, and technicians.

Principles of Engineering exposes students to the various engineering related careers. Students explore careers in engineering, ranging from engineer technicians with 1-2 years of post-secondary education to professional engineering specialties. The content includes the study of the engineering process and engineering systems. Student design teams will solve problems that require formulating plans for product development; developing preliminary designs; preparing detail, assembly, and layout drawings; developing prototype models; and using two- and three-dimensional CAD workstations.

Digital Electronics I presents pre-engineering students with instruction and skills in basic electricity and electronics. The course familiarizes students with safe laboratory practices, introduction of electrical quantities, color code, circuit test equipment, simple waveforms, circuit analysis, and construction techniques involving both passive and active devices.

Digital Electronics II The digital electronics course familiarizes students with digital logic technologies. Students study digital number systems, logic gates and circuits, Boolean algebra, arithmetic logic circuits, encoders, decoders, digital memory, digital to analog and analog to digital converters, as well as circuit design and fabrication

Engineering Design and Technology I introduces students to the design of robotic systems. Included in this course are hydraulics, DC power and positioning, microprocessor fundamentals and programming, data acquisition via sensors, data handling and conversion, interfacing and control of devices. The application of simple machines, in the development of robots designed to solve specific problems is the goal of this program.

Engineering Design and Technology II introduces students to the systems, tools, materials, and processes of manufacturing through instruction and hands-on activities. Students apply CAD, Computer and Numerically Controlled (CNC) programming, and manufacturing skills to construct prototype models. They also apply electronics, hydraulics, pneumatics, robotics, sensors, and mechanical systems to solve various manufacturing problems.



HIGH SCHOOL PROFESSIONAL TECHNOLOGY STUDIES



*A dynamic approach addressing
America's need for a highly skilled
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Do you like taking things apart to see how they work? Do you enjoy building models or drawing designs? Do you do well in your math, science, or computer classes? If the answer to these questions is yes, you might want to consider a career in Engineering and Technology.

What's so important about Professional Technical studies?

- ✓ Employers are finding it increasingly difficult to hire qualified employees to work in technical career fields.
- ✓ Too many college students (over 50%) drop out of engineering and technical programs because they did not have high school exposure in these courses.
- ✓ Over 70% of all new careers will incorporate engineering or scientific technology as an essential component of their work.
- ✓ These courses connect math and science to the real world.

What Are Career Clusters and Pathways?

Career clusters are occupations/careers that are grouped together because the people in them share similar interests, talents, and abilities. Pathways are a series of related courses that can prepare students to pursue these career opportunities. Students at the 9th and 10th grade level might start identifying which pathway seems the most appealing to them. Students at the 11th and 12th grade will start finding interesting occupations within their chosen pathway.

All **career clusters** include a variety of occupations that require different levels of education and training. As early as 10th or 11th grade, students should be researching the necessary education for their chosen occupations.

Our school offers lots of courses that can help you explore many career pathways.

The Professional Technical Studies program in your school can help you select a sequence of courses that are designed to help you explore a career in technology. Our goal is to prepare you for a two or four-year college or technical program after you complete high school. Each class we offer uses state-of-the-art technology and software. These courses are taught using experimentation and project work rather than lectures to help you learn the material and develop skills. Classes focus on problem solving and encourage students to work in teams. As part of the capstone project during your senior year, you will work as an intern to further your course of study. In many cases, you may actually earn college credit through special agreements with colleges.

Here's why you should take Professional Technical Studies courses in High School

Professional Technical Studies are a collection of demanding courses. You will have an opportunity to explore a broad field of engineering and technical studies. These courses can help you choose a career and make decisions about further education. It's important to note that most rewarding careers in technology do not require four-year college degrees. However, it is better to find out in high school if a particular area of study is not for you rather than waiting until college. These interesting courses are project based and are designed to develop your problem solving skills

as both a member and leader of a team. This is an important skill that will set you apart from others when you enter the world of work. After completing this sequence of courses, you will have a competitive advantage when you start your college or technical school classes.

Here's how you can fit Engineering and Technical Studies into your high school schedule.

Here's a sample schedule that leads to certification in this area of study. **Students who enroll in this program are expected to complete a college preparatory sequence of courses in math and science.**

Engineering and Technical Studies

Grade 9	Units	Grade 10	Units
English	1	English	1
World Regions	1	World History	1
Intro to Algebra	1	Algebra I	1
Science	1	Biology I	1
Eng. Drawing	1	Digital Electronics I	.5
Prin. Engineering	.5	Digital Electronics II	.5
Phys. Ed.	1	Computer Class	1
Elective	.5	Elective	1
Grade 11	Units	Grade 12	Units
English	1	English	1
US History	1	US Government	.5
Geometry	1	Algebra II	1
Physics	1	Chemistry	1
Eng Dsgn Tect I	1	Eng Dsgn Tech II	1
Foreign Language	1	Health	.5
Elective	1	Foreign Language	1
		Elective	1

* These are suggestions and not limitations. We offer many other tech classes that could apply to a strong tech base. Also - It is still worthwhile to take one or two courses if you can't take the whole sequence... Ask your counselor!