

TECHNOLOGICAL STUDIES

The following programs are designed to prepare students for college and career.

Engineering and Design Technology 1 CP-A

This semester course emphasizes the application of the design method to invent solutions to real world technological problems. Students will identify problems, use internet research, and design and fabricate models or prototype solutions. Problem solving and design skills are taught through a variety of activities. Hands-on themes for this level include, but are not limited to, structural, fluid powered, and robotic systems. This course provides all students with valuable skills such as: problem solving, design, creative thinking, systems thinking, team work, documentation, and computer applications.

Grades 9 through 12 2.5 Credits

Prerequisite: None. This course is scheduled with Media Technology 1 as a full year program.

Engineering and Design Technology 2 CP-A

This course will reemphasize the design and problem solving experiences using the design method to solve problems. Students will focus on interdisciplinary applications of knowledge gained in other content areas. Hands-on themes for this course include but are not limited to: mechanical, electronic, and alternative energy.

Grades 10 through 12 5 Credits

Prerequisite: Successful Completion of Engineering and Design Technology 1, Women in Engineering, or Mechanical Movement

Engineering and Design Technology 3 Honors

This course will highlight the principles of engineering. Students will explore areas which require the applications of fundamental engineering concepts. They will discover many important science and math concepts that underlie the systems that are common to most engineering disciplines. Real life case studies will develop their basic skills for solving open-ended problems using the design process. The process will consist of documentation, material manipulation, internet research, mechanical drawing, patent process, having an engineer mentor, cross curricular activities, and high order thinking skills. The students will enter engineering design competitions.

Grades 11 and 12 5 Credits

Prerequisite: Successful completion of Engineering and Design Technology 2, with a grade of 82 or higher

Engineering and Design Technology 4 Honors

This capstone course will require students to conduct in-depth research, develop solutions, and construct working prototypes that solve complex problems related to Engineering Design Technologies. Students will design and develop a comprehensive electronic and print design portfolio to present the results of their research and solution. Solutions will be formally presented to peers and department faculty.

5 Credits

Prerequisite: Teacher Recommendation, successful completion of EDT 3, with a grade of 82 or higher.

Power, Energy, and Transportation Technology 1 CP-A

Concerned about rising fuel costs? Interested in how or if alternative fuels will affect our dependence on foreign imports? This course is designed to introduce students to various power, energy, and transportation systems. Power systems, land, and marine transportation technology will be addressed. A heavy emphasis on alternative fuels, including solar, hydrogen, diesel, electric, and ethanol will be discussed. Students will work with simulated, hands-on activities including land, hybrid roving vehicles, small engines, and marine transport systems with the objective of applying acquired knowledge in order to solve real life situations. This is the first level of a planned three level program.

Grades 9 through 12 5 Credits

Power, Energy, and Transportation Technology 2 CP-A

This course concentrates on a wide range of technological areas related to Power, Energy, and Transportation Technology. The specific focus will be on hands-on problem solving activities involving air and space transportation in which the students will work together in lab activities designed to reinforce the content presented. Students will continue to explore sources of alternate energy in order to better understand the need for energy management in our society, with specific attention to hydroelectric, wind, and solar energy. Emphasis on power systems is enhanced as the students continue to acquire and apply the knowledge that is presented.

Grades 10 through 12 5 Credits

Prerequisite: Power, Energy, and Transportation Tech 1

Power, Energy, and Transportation Technology 3 Honors

This advanced level course will continue to explore the areas of technology that relate to Power, Energy, and Transportation. It will require students to participate in challenging, hands-on design, and problem solving activities that will reinforce the principles of land, marine, air, and space transportation. Furthermore, applications of alternative energy will be addressed through real-world issues and potential solutions. The design loop will be used to develop clear and professional documentation. The students will participate in local and state engineering competitions.

Grades 11 and 12 only 5 Credits

Prerequisite: Power, Energy, and Transportation Tech 2, with a grade of 82 or higher.

Power, Energy, and Transportation Technology 4 Honors
This capstone course will require students to conduct in-depth research, develop solutions, and construct working prototypes that solve complex problems/opportunities related to Power, Energy, and Transportation. Students will design and develop a comprehensive electronic and print design portfolio to present the results of their research and solution. Solutions will be formally presented to peers and department faculty. **5 Credits**

Prerequisite: Teacher Recommendation, successful completion of PET 3, with a grade of 82 or higher.

Mechanical Movement CP-A

This course is aimed at students who want to make their own automated devices. It will be useful to people who want to make any sort of mechanical toy/sculpture/device. It will help a student understand the practical basics of mechanisms. Students will learn the history and principles of movement, design, control, and construction of automated systems.

Grade 9 only **5 Credits**

Women in Engineering Design and Technology CP-A

This course will provide students with knowledge of various fields of engineering and experiences with the engineering process through participation in problem solving and design activities. Studying areas of engineering and then applying the engineering process in order to solve real life problems will provide students with a better understanding of how real world situations are addressed. Many speakers will help motivate the students to consider engineering as a career goal.

Grades 9 through 12 **5 Credits**

Biotechnology 1 CP-A

Biotechnology is a distinct technological area of human adaptive behavior. Biotechnology involves the design of techniques and systems utilizing living organisms, or their parts, to accomplish some purposeful goal. Biotechnology is utilized within food production, medical procedures, environmental restoration, and many other aspects of our lives.

Biotechnology uses living cells and materials produced by cells to create pharmaceutical, diagnostic, agricultural, environmental and other products to benefit society. This first of a three -year program of study, will be an introduction to biotechnology systems. Areas touched on may include: bioengineering, healthcare, cultivation of plants and animals, fuel and chemical production, waste management and treatment, biotechnological materials and application.

Grades 9 through 12 **5 Credits**

Construction and Manufacturing CP-A

This course gives the students the opportunity to explore their interests in the areas related to residential construction and manufacturing systems. This course will provide critical hands-on learning and will cover business plans, marketing of the product, advertising, sales, foundations, construction walls, windows, electricity, plumbing and heating. Job opportunities in the manufacturing industry including management are covered in the course.

Grades 11 & 12 **5 Credits**

Prerequisite: Mechanical Movement or Material Processing/Science

Materials Science CP-B

This course is designed for students interested in science, engineering, technology, design, or manufacturing. The skills taught in this class include: accuracy, craftsmanship, safety and problem-solving. The course may focus on the properties of polymers, ceramics, metals and alloys, semi-conductors, and bio-materials.

Grades 9-12 **2.5 Credits**

This course must be taken in conjunction with Personal Finance.

Communication Technology CP-A

This course will introduce students to the systems of communication. Areas of study include video game design, Geographical Information Systems (GIS), electronics, fiber optics, and other systems. The IT field is booming and students need a basic understanding of communication technology.

Grades 9 through 12 **5 Credits**

Media Technology 1 CP-A

This course will offer students a basic hands-on approach to the technical processes and operations necessary to produce videotapes. Techniques will include camera operation, script writing, lighting, editing, and directing. Introduction to computer generated graphics and editing will also be included.

Grades 9 through 12 **2.5 Credits**

Prerequisite: None. This course is scheduled with EngineeringTech 1 as a full year program.

Media Technology 2 CP-A

The emphasis on this course will be on studio work. Students will apply their videotaping skills to produce and crew various events for the school. The cross-curriculum approach with other departments of the school will be introduced. Students will also be required to produce various assignments given by the instructor. A more extensive use of computer generated editing will be used.

Grades 10 through 12 **5 Credits**

Prerequisite: Successful completion of Media Technology 1

Media Technology 3

Honors

Students in this class will use all of their technological skills to produce shows to be aired on the local cable public access channel. Reports of events at the school and in the local community will be emphasized. Students will be required to work independently at times to meet deadlines. Students will produce a Remembering High Point video.

Grades 11 and 12

5 Credits

Prerequisite: Successful completion of Media Technology 2, with a grade of 82 or higher.

Media Technology 4

Honors

Students will use skills from Media Technology 1,2,3 to develop high quality, full length video programs for public information broadcasting on cable television. The course will emphasize use of advanced video and video editing technology skills. Strong teamwork and a strict adherence to deadlines to meet broadcast schedules are necessary elements for success. Disciplined and independent self starters will prosper in this course. Students will direct and edit their own productions in addition to working on production teams for other school and community based projects. This course is best suited to self motivated students who work well in small teams.

Grade 12

5 Credits

Prerequisite: Media Technology 3, with a grade of 82 or higher.

Honors level courses (3rd and 4th year) have a higher demand for research, development, documentation presentation, and mathematical applications. Students may engage in various engineering and design competitive events. Analysis of design and creativity is essential for success.

Students are expected to be very active learners who initiate and participate in all facets of the class. All honors level courses in this department are designed for those students who are insightful, analytical, and respectful of the power of technology, design, and problem solving. Extra hours above the regular school day are a requirement for success. Honor students are encouraged to enroll in higher level science and math courses concurrently.

WORK STUDY PROGRAM

Media and Engineering

CP-B

Students who will be seeking admittance to this program in their senior year are encouraged to take Driver Behind the Wheel Training at age 16 so they are eligible for their license at age 17 – since they must be able to provide their own transportation.

This program provides the senior student with the opportunity to relate their skills in the world of work while earning money. Through a cooperative arrangement between the school and community employers, students spend a part of the day in school and a part in an approved office, related commercial/retail establishment, or engineering firm, depending on completion of prerequisite. The program is comprised of the related classroom course and up to three periods of released time for paid work experience. Fifteen credits are earned upon successful completion of the course.

The related class covers life skills content related to money management and career preparation. Money management topics covered include banking, taxes, using credit, maintaining a checking account, making major purchases, independent living, consumerism, civic financial responsibility, and insurance. Included in the career preparation area are job searching, resumes, understanding paychecks, dealing with different bosses and co-workers, how to work as part of a team, workplace communications, worker accountability and productivity, safety on the job, and ethics in the workplace.

15 Credits

Prerequisites: See Chart Below
Senior Enrollment Only

Category for Work Study	Required Courses
Media	Completion or concurrently enrolled in Media 3
Engineering	Completion or concurrently enrolled in EDT 3 or PETT 3