

# Technology Education

## COMMUNICATIONS SYSTEMS – 1 UNIT (8418)

Ninth – Eleventh Grades

Prerequisite: None

Communications Systems is a one-semester, single-period course that involves students in using technology to communicate information in visual or audio formats. Communications systems are an integral part of the other technological activities involving input, processing, output, and feedback. Students develop personal interests and analyze the impact of communication systems on people, society, and culture.

## GRAPHIC COMMUNICATIONS – 1 UNIT (8494)

Ninth – Twelfth Grades

Prerequisite: Communications Systems

Graphic communications is a one-semester, single-period course which deals with printed images such as newspapers, books, printed T-shirts, signs, photographs, wallpaper, or stationery. Students use a variety of graphic arts equipment and processes to make visual projects with different materials. Students design, plan, and reproduce products similar to those produced by the graphic arts industry. Cameras, printing presses, and copy machines are among the many equipment items used.

# Organizations



The Technology Student Association (TSA) is the only student organization devoted exclusively to the needs of students interested in technology. Open to students enrolled in or who have completed technology education courses, TSA's membership includes over 150,000 middle and high school students in 2,000 schools spanning 48 states. TSA is supported by educators, parents and business leaders who believe in the need for a technologically literate society. Members learn through exciting competitive events, leadership opportunities and much more.

<http://www.tsaweb.org/>

# Certification

To encourage more students to work toward a selected industry credential or state license while pursuing a high school diploma, the Path to Industry Certification: High School Industry Credentialing program was developed. Students who earn a credential by passing a certification or licensure examination may earn up to two student-selected verified credits to meet graduation requirements. Most courses offer a certification.

Churchland High School  
757-686-2500



I.C. Norcom High School  
757-393-5442



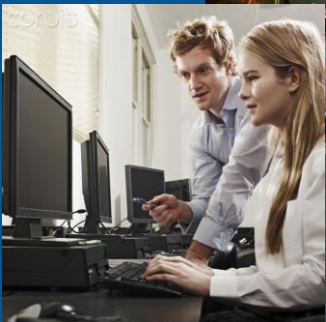
Woodrow Wilson High School  
757-465-2907



Office of Career and  
Technical Education  
757-822-2711



Portsmouth Public Schools  
[www.pps.k12.va.us](http://www.pps.k12.va.us)



## Technology Education



## Course Selections

# Technology Education

## **TECHNICAL DRAWING – 1 UNIT (8434)**

Ninth – Eleventh Grades

Prerequisite: None

This is a one-semester, single-period foundation course in which students experience the basic language of industry and technology. Students design, sketch, and make technical drawings, models, or prototypes of real design problems. The course is recommended for future engineering and architecture students.

## **ENGINEERING DRAWING – 1 UNIT (8493)**

Tenth – Twelfth Grades

Prerequisite: Technical Drawing

This one-semester, single-period advanced drawing and design course enables students to use a graphic language for product design, technical illustration, assembly, patent, and aeronautical drawings. Students use computers, calculators, and descriptive geometry and adhere to established standards to solve design problems.

## **ARCHITECTURAL DRAWING – 1 UNIT (8492)**

Tenth – Twelfth Grades

Prerequisite: Technical Drawing

Architectural Drawing is a one-semester, single-period course which provides students the opportunity to learn about the principles of working drawings and construction techniques. Experiences include residential and commercial building designs, rendering, model making, structural details, and community planning. Students use computer-aided drawing and design (CADD) equipment and established standards or codes.

## **PRODUCTION SYSTEMS – 1 UNIT (8446)**

Tenth – Twelfth Grades

Prerequisite: None

Students in this one-semester, single-period laboratory course design, build, and test scale-model structures, working with projects that help them to understand the jobs of architects, carpenters, electricians, plumbers, surveyors, contractors, masons, design engineers, and a variety of other construction careers. (This course is a companion to Manufacturing Technology).

## **PRINCIPLES OF TECHNOLOGY I – 1 UNIT (9811)**

Tenth – Twelfth Grades

Prerequisite: Algebra I

Students in this one-semester, single-period course apply physics and math principles through a unified systems approach for a broad knowledge base of the principles underlying modern technical systems. This course covers seven technical principles: force, work, rate, resistance, energy, power, and force transformers, emphasizing how each principle plays a unifying role in the operation of mechanical, fluid, electrical, and thermal systems in high-tech equipment.

## **PRINCIPLES OF TECHNOLOGY II – 1 UNIT (9812)**

Tenth – Twelfth Grades

Prerequisite: Principles of Technology I

Students in this one-semester, single-period course build on the knowledge base developed in Principles of Technology I while applying math and physics principles of problem solving activities. They are provided a further understanding of the principles of mechanical, fluid, electrical, and thermal systems that demonstrate the basic principles of physics, dividing them into seven units: Momentum, Waves and Vibrations, Energy Converters, Transducers, Radiation, Light and Optical Systems, and Time Constants.\*

**\* Students who have completed two science courses prior to taking this sequence and who successfully complete both Principles of Technology I and Principles of Technology II may receive a Physics credit for Principles of Technology II. Principles of Technology I counts as an elective credit.**

## **TECHNOLOGY FOUNDATIONS – 1 UNIT (8402)**

Ninth – Twelfth Grades

Prerequisite: None

In Technology Foundations, students in this one-semester, single-period course acquire a foundation of knowledge in technological material, energy, and information and apply processes associated with the technological thinker. Laboratory activities engage students in creating new ideas and innovations, building systems, and analyzing technological products to learn further how and why technology works. Working in groups, students build and control systems with engineering in the development of a technology.

## **TECHNOLOGY TRANSFER – 1 UNIT (8404)**

Tenth – Twelfth Grades

Prerequisite: Technology Foundations

In Technology Transfer, students in this one-semester, single-period course work with various computers and materials on projects that combine systems such as production, energy, communications, transportation, and other technologies. Students use math, science, and communication in designing and building a computer device or an energy efficient vehicle. Thematic activities engage students in community problems where they transfer the technological method to address recycling, space exploration, and housing.

## **MANUFACTURING TECHNOLOGY – 1 UNIT (8426)**

Tenth – Twelfth Grades

Prerequisite: Production Systems

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Students in this one-semester, single-period course organize and operate a manufacturing company to explore careers and work habits typical of American industry's free enterprise system. Students make projects or products in the company that can be sold, while experiencing the work of planners, designers, engineers, machine operators, personnel managers, and a variety of other manufacturing careers. (This course is a companion to Construction Technology).

## **COMPUTER CONTROL AND AUTOMATION – 1 UNIT (8420)**

Ninth – Eleventh Grades

Prerequisite: Communications Systems

Computer Control and Automation is a one-semester, single-period course. Students engage in a very broad study of the technical aspects of computers and their application to production, transportation, and communication systems. Topics include computer equipment and operating systems, programming, control processing information, and social/cultural impact of computers. Problem-solving activities challenge students to plan, program, and interface devices with computer systems. Learning activities include experiences with robotics and control systems, computer-aided design, and computer-aided manufacturing.