

TECHNOLOGY EDUCATION

Technology education includes the study of transportation, communication, manufacturing, construction, and engineering. The curriculum provides students with an opportunity to develop their career and vocational interests. Technological literacy will be stressed while the students are engaged in activity-based learning. Students will develop critical thinking and problem solving skills through interdisciplinary learning activities involving math, science, and technology. Teamwork is emphasized whenever possible. The environmental, social, and economic impacts of technology will be considered in all courses. Critical thinking skills learned in technology education are vital to all students, no matter what level of education they intend to pursue.

TECHNOLOGY EDUCATION COURSE DESCRIPTIONS

EXPLORING TECHNOLOGY (6201)

Full Year Credit 1.00 Weight 1.02

Prerequisites: This course is open to students in Grades 9-12.

Description: This course serves as an introduction to all technology education programs offered at RHS and builds on systems model concepts learned from technology classes taken at Vernon Center Middle School. The social, cultural, environmental, and economic impacts of technology are covered. The career cluster areas of transportation, construction, manufacturing, and communications are explored in this activity-based course. It involves interesting, hands-on, minds-on technology learning activities (TLAs). In transportation systems (land, sea, air, and space), activities involve building working models of rockets, gliders, boats, and magnetic levitation (MagLev) vehicles. In communication systems, students will design custom ads and memos on computers, learn about basic drafting and computer-aided design (CAD). In construction systems, students will use simulation software to design, build, and test bridges on the computer. Students will also apply CAD drafting technology in engineering design of products. Basic electrical utility wiring will be experienced. In manufacturing systems, students will apply basic drafting and layout principles to fabricating products. Other activities may include *Car Builder*, *SimCity*, and *Map & Go* software, GPS, Internet research, and more.

ENGINEERING DRAFTING (6304)

Full Year Credit 1.00 Weight 1.04

Prerequisites: This course is open to students in Grades 9, 10, 11, and 12.

Description: Engineering Drafting is an accelerated course for the college bound engineering or technical student. The course introduces graphic language, the language of industry. Graphic communication, the visual expression of information and ideas, will be explored including computer-aided drafting (CAD). The student's ability to visualize, think in three dimensions, and communicate effectively using the graphic language will be developed. This is a comprehensive program for developing engineering drawings and technical communication skills. Team problem solving skills will be applied to the solution of practical engineering design problems.

ARCHITECTURAL DRAFTING (6305)

Full Year Credit 1.00 Weight 1.04

Prerequisites: This course is open to students in Grades 10, 11, and 12. Prior successful completion of Exploring Technology or Engineering Drafting is recommended.

Description: This "real world" course will place emphasis on interior and exterior home design. Students will use the latest versions of computer-aided design (CAD) software to produce 2D, 3D perspective, and photo-realistic renderings of interior and exterior architectural designs. The intent of this course is to provide the knowledge and experience needed to develop and complete plans for a single family home including site plans, landscape plans, and elevations. Scale models of student designs may be constructed. He or she will be exposed to a study of architectural styles and types, functional room planning, designing with interior decor, color theory, lighting, energy planning, and landscaping techniques. Team problem solving skills will be applied to the solution of realistic design problems. The content of this course can be customized to meet the needs and interests of individual students. Students will have the opportunity to enter their model structures for awards given at the annual Hartford Home Show.

ADVANCED DRAFTING (6306)

Full Year Credit 1.00 Weight 1.04

Prerequisites: This course is open to students in Grade 12. A grade of 75 or higher in Architectural Drafting is recommended. Teacher approval is required.

Description: This course is designed to meet the individual needs of those students wishing to specialize in a specific field of drafting and design, within the career cluster areas of communications, engineering, manufacturing, or transportation. Independent study and problem solving will be stressed. Each student will be encouraged to initiate, develop and complete a major project within his or her specific field of interest. When possible, students will communicate with experts in their field, both in person and via the Internet. He or she will shadow a mentor on a job site to learn about the career opportunities available to them. Students will learn about educational opportunities and the career planning process, how to complete an application, how to produce a professional resume, and how to prepare for a personal interview.

POWER/AUTO TECHNOLOGY I (6219)

Full Year Credit 1.00 Weight 1.02

Prerequisites: This course is open to students in Grades 10, 11, and 12.

Description: This introductory course will familiarize students with the basic tools, materials, machines, and procedures used by the general auto mechanic. The "systems approach" to learning (engines, cooling, lubrication, electrical, fuel systems, brakes) will be emphasized. The students will earn the opportunity to work on their own vehicles and the automotive program's vehicles to apply the theories learned in the classroom as they progress through the basic skills content. Alternative power and transportation will also be topics of discussion. It is recommended that students have a valid driver's license (or be working towards earning one) for this course.

POWER/AUTO TECHNOLOGY II (6220)

Full Year Credit 1.00 Weight 1.02

Prerequisites: This course is open to students in Grades 11 and 12. Prior successful completion of Power/Auto Technology I is required.

Description: Students assume the responsibility of advanced automotive repair, rebuilding work, diagnostic troubleshooting, and light auto body work. Typical service problems in each system are identified, along with symptoms, probable causes, and recommended service procedures. Students work in groups, apply problem solving skills, and utilize the three C's (complaint, cause, and correction) to diagnose and repair a vehicle. The eight ASE content areas and testing procedures are stressed for those students who display an interest in pursuing an automotive-related career.

GRAPHIC ARTS I (6215)

Full Year Credit 1.00 Weight 1.02

Prerequisites: This course is open to students in Grades 9, 10, 11, and 12.

Description: This course introduces the student to most aspects of the communications industry. Printing, publishing, website and multimedia design will be stressed. Teamwork at this level will include design, layout, composition, proofing, copy preparation, computer based publication, and animation. Knowledge of desktop publishing, scanning, layout skills, web and print graphics will also be stressed. This course is part of the communications career cluster and is open to all students.

GRAPHIC ARTS II (6216)

Full Year Credit 1.00 Weight 1.04

Prerequisites: This course is open to Grades 10, 11, and 12. Prior successful completion of Graphic Arts I is required.

Description: This course is an extension of Graphic Arts I. Students will be able to successfully complete design jobs including website design, stationary packages, packaging design, and advanced animation. The students will obtain an understanding and appreciation of desktop publishing systems, scanning, and graphic design for web and print. Group and individual projects will be required. This course is open to all students and is recommended for those who want a career in the Graphic Arts/Design industry.

WOODWORKING I / MANUFACTURING (6204)

Full Year Credit 1.00 Weight 1.02

Prerequisites: This course is open to students in Grades 9-12.

Description: This course utilizes wood as a medium to teach manufacturing concepts. Although end products are produced, emphasis is placed on the process, making the product an incidental outcome. The entire process and product utilize problem solving skills, with solutions being tested and applied. Analysis is focused on design concepts, jigs and fixtures, machine selection and application, material flow and quality control. Components are made to exacting specifications allowing all to be interchanged. Production line techniques are utilized for the final assembly, demonstrating a rapid completion of a complex, high quality product. Students work in teams to problem solve and produce components. Computer interfaced machines (CNC) are utilized in the production process, and safe work habits are stressed and applied. For students with specific interests, individual and more traditional type projects are allowed after the completion of required projects.

WOODWORKING II / CONSTRUCTION (6205)

Full Year Credit 1.00 Weight 1.02

Prerequisites: This course is open to students in Grades 10-12. Prior successful completion of Woodworking I / Manufacturing is required.

Description: This course will provide students with an introduction to construction technology. Emphasis is placed on information relating to tools, materials, equipment, and processes used in the construction field. Practical application is sought through the construction of scale models and/or outbuildings. A student enterprise designed to develop basic building skills will be formed. Additional content includes the business of construction, administration, financing, various construction projects, design, engineering, and information on construction industry careers. Safe work habits are stressed. The course will combine the practical and theoretical approaches to learning and will place emphasis on technology's impact on society and the environment, group problem solving skills, and the integration of math and science concepts. It is highly recommended for students interested in a career in construction. It is intended for the general level student, two-year technical, or four-year college-bound student with an interest in the field of construction engineering.

PRINCIPLES OF TECHNOLOGY (6303)

Full Year Credit 1.00 Weight 1.04

Prerequisites: This lab course is open to students in Grades 11 and 12. Prior successful completion of Basic Algebra I or Applied Math Topics-Algebra and Applied Math Topics-Geometry is required.

Description: This course enables students to better understand modern technology through the practical application of physical principles. A variety of “hands on” lab activities will be used to study the scientific principles of force, work, rate, resistance, energy, power, and force transformers. The focus will be on mechanical, fluid, thermal, and electrical energy systems as they relate to industrial applications such as those found in manufacturing, communication, construction and transportation systems. Team problem solving will be emphasized during lab activities. Environmental issues and career opportunities will be explored. Students will earn one credit that will fulfill the physical science graduation requirement.

DC ELECTRONICS (6208)

Fall Semester Credit 0.50 Weight 1.04

Prerequisites: This course is open to students in Grades 9, 10, 11, and 12. Prior successful completion of Basic Algebra I is recommended.

Description: This is a basic electricity/electronics communications course. It involves both theory and hands-on coverage of direct current (DC) with computer-aided instruction. Topics covered include electron theory, voltage, current, resistance, switches, circuit breakers, relays, robotics, Ohm’s Law, electric circuits, magnetism, motors, and DC generators. Interesting group projects to be constructed in class may include building multimeters, MagLev or solar powered model race cars, light, sound and motion detector devices, and voice amplifiers. This course is both interesting and preparatory for the student who wishes to continue on in the field of electricity, electronics, mechanical or electrical engineering. It is also beneficial for students concerned with improving their technological literacy in today’s high tech world.

AC ELECTRONICS (6209)

Spring Semester Credit 0.50 Weight 1.04

Prerequisites: This course is open to students in Grades 9, 10, 11, and 12. Prior successful completion of Basic Algebra I or higher level Math course and DC Electronics is strongly recommended.

Description: This is a basic electricity/electronics communications course that involves both theory and hands-on learning with computer-aided instruction (CAI). Topics covered include generation of AC electricity, sine waves, AC resistance, inductance, capacitance, and transformers. Students will study the basic concepts, systems, and subsystems of electronic technology including robotics. Students will experience problem solving with the aid of meters and test equipment used in industry. Interesting group projects to be constructed in class may include power supplies, sound and motion detection devices, amplifiers, magnetic levitation vehicles, radios, robots, and computer controlled devices. This course is both interesting and preparatory for the student who wishes to continue on in the field of electricity, electronics, mechanical or electrical engineering. It is also beneficial for students concerned with improving their technological literacy.

COMPUTER REPAIR – HARDWARE (6311)

Fall Semester Credit 0.50 Weight 1.04

Prerequisites: This course is open to students in Grades 10-12.

Description: This is a hands-on application course which will study computer hardware, computer repair, non-destructive troubleshooting methods, and basic networking. Students will study the hardware operation of the personal computer and troubleshoot an operational computer in the process. This includes how to upgrade the hardware if it is cost effective to do so. Successful completion of this course can lead to CompTIA A+ Computer Repair Certification required by most companies that hire computer technicians.

COMPUTER REPAIR - SOFTWARE - OPERATING SYSTEMS (6312)

Spring Semester Credit 0.50 Weight 1.04

Prerequisites: Prior successful completion of the Computer Repair - Hardware course is recommended.

Description: This is a hands-on application course which will study computer operating systems, software configurations, computer repair, non-destructive troubleshooting methods, and basic network configuration. Students will study multiple operating systems of the personal computer and learn how to diagnose and troubleshoot them in the process. Successful completion of the course can lead to CompTIA A+ Computer Repair Certification required by most companies that hire computer technicians.

FIRE TECHNOLOGY (6310)

Full Year

Credit 1.00

Weight 1.04

Prerequisites: This course is open to students in Grades 11 and 12.

Description: This course will introduce students to firefighting and public safety. It will familiarize students with all aspects of firefighting including cooperation with police and emergency medical technicians. The course will also raise the level of career awareness and prepare students for entry-level employment in this area. The course is part of the Tech Prep program and will include guest speakers and field trips to the police and fire departments as well as other selected training facilities. This course can accommodate eighteen (18) students. Seniors will be given preference in the scheduling of the course. If necessary, a lottery will be held to determine the eighteen students who may participate in the course.

INDEPENDENT STUDY IN TECHNOLOGY EDUCATION

Credit and weight by Arrangement

Prerequisites: Approval of Housemaster, Technology Education staff, and Guidance Counselor is required.

Description: Independent study is offered to students who have successfully completed other Technology Education classes and who wish to further their study *in a specific area where there is no advanced offering*. The student will write his or her own plan of activities which must include measurable outcomes as outlined in the Technology Education department's guidelines.