

Fairport High School

2012 – 2013

Course Offerings

Technology Department



What is the Subject Matter in Technology?

Technology is the study of broad aspects of industry, such as information technology, construction, transportation, the Web, communications, automotive, engineering, manufacturing, and research and development of new technologies. More specifically, it includes subjects like design, drawing, power mechanics, electricity-electronics, metalworking, plastics, video production, engineering, transportation, information technology, web design, computer game design, computer applications, and woodworking. Each of the preceding areas may involve a study of several subareas.

TECHNOLOGY DEPARTMENT TEACHERS

Gianni Bussani Steven Hawkins-Rusch Chris Stahl Bill Stanton

Automotive Courses

Consumer Auto

Students learn about purchasing a car, body repair, tune-ups, oil changes, tire and battery maintenance, and cooling systems in preparation for taking care of their own cars.

Credit:	1/2 unit
Time:	One semester
Exam:	Departmental
Prerequisite:	None

Auto Service & Repair

In this course, students will use the most current equipment to diagnose, analyze, and repair cars. Auto body repair, and painting, engine analysis, and brake repair are a major component of this course.

Credit:	1/2 unit
Time:	One semester
Exam:	Departmental
Prerequisite:	Small Gas Engines or Consumer Auto

Vocational Automotive

Students build on previous automotive knowledge and sharpen their mechanical skills as they learn about such topics as repair, scope testing, computer diagnosing, front-end alignment, engine rebuilding, air conditioning, and fuel systems.

Credit:	2 units
Time:	10 periods per week, full year
Exam:	Departmental
Prerequisite:	Small Gas Engines and Auto Service & Repair

Computer Courses

Computer Game Design

Students will be provided with a background in programming, design, and technology with an emphasis being placed on independent problem solving in a constantly evolving field. Students will learn the fundamental concepts of game programming using Flash and Action-Script. These programs will provide students with a solid platform for creating web-based games, video animations, and movies. Students will write scripts to implement navigational strategies and control the display of graphics, text, audio, and video. This course is designed to present the skills through hands-on experiences which are required to create computer games. Students will employ the fundamental structures of computer programming such as loops, variables, parameters, and functions in their scripts.

Credit:	1/2 unit
Time:	One Semester
Exam:	Departmental/Project Based
Prerequisite:	None

Information Technology

Going beyond a basic computer literacy course, IT SUPA exposes students to a wide variety of techniques to manage information in computerized form, from basic spreadsheet concepts to complex database management systems. Students will be introduced to the conceptual basis and strategies for effective graphic presentation of information and will foster a creative use of graphic concepts. Students are introduced to basic computer programming techniques as well as ethical issues involved with the Internet. Lab experiences will include the creation of podcasts, maintenance of personal blogs, introduction to Web page design, and original movie production. Meets IB requirements for Information Technology in a Global Society.

Credit:	1/2 unit
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Time: One semester
Exam: Departmental
Prerequisite: None

Students may be able to obtain college credit by electing to participate in the SUPA Program (Syracuse course: IST 195) with Syracuse University.

Tuition: Approximately \$330 paid to Syracuse University for students who opt for credit

Credit: 3 college credits (transferable to other Universities)

Web Design

Students explore real-world challenges as they design and develop websites for their own personal use and for use at Fairport High School and the community. Areas of exploration include programming languages for the Web, including HTML, CSS, JavaScript and introduction to Flash. Manipulation and optimization of graphics for use on the Web and ethical issues and the social impact of the Internet will also be the focus of the first half of this course. The second half of the course will include the use of Web Authoring software. Meets IB requirements for Information Technology in a Global Society.

Credit: 1/2 unit
Time: One semester
Exam: Departmental
Prerequisite: None

Students may be able to obtain college credit by electing to participate in the SUPA Program (Syracuse course: IST 263) with Syracuse University.

Tuition: Approximately \$330 paid to Syracuse University for students who opt for credit

Credit: 3 college credits (transferable to other Universities)

Digital Media Production *(replaces TV & Electronic Media and Digital Communications)*

In this course students will receive a foundation for creating and working in the world of Radio, Television and Film. Students will experience first-hand what being a radio DJ is all about as they broadcast over WBER 90.5 FM. This course utilizes the Macintosh Media Center where students will use state of the art equipment and software to generate an array of hands-on projects including producing and filming a television news program.

Credit: 1/2 unit
Time: One semester
Exam: Departmental
Prerequisite: None

Networking Hardware *(Replaces Networking 1)*

The World of Computing will expose the student to the physical world of the computer. Through investigation and activities the student will be engaged in hands-on projects involving computers, routers, hubs, switches and other networking devices. Projects will include taking a computer apart to learn about how a computer works and how data travels over a network. Students will learn the concepts of computer parts and their function, computer types, network basics, and future trends in the world of computers.

Credit: 1/2 unit
Time: One semester
Exam: Departmental
Prerequisite: None

Networking Software & Security *(replaces Networking 2)*

Students will begin an exploration of networks and how they work. Various types of web browsers and search engines will be investigated. Students will learn about wired and wireless networking, and future trends in networking, such as “cloud computing.” This class takes a hands-on approach to working with networks and their setups. Projects include learning how to gain access to a network from your computer, and how to protect your computer from viral attacks and Spam. After completing this course students will be able to get the most out their computer.

Credit: 1/2 unit
Time: One semester
Exam: Departmental
Prerequisite: None

The Production of Film

Have you ever wanted to make a movie? Now you can! Students enrolled in this class will learn how to use the tools of video production. In this project-based course, students create their own movies, trailers, advertisements, posters, and movie jackets. Students will utilize the iLife™ suite software, iMovie and GarageBand, as well as Photoshop and InDesign for class projects.

The concepts of lighting, audio, video, editing, and photography will be integrated into class projects. Students will learn about cutting- edge technological tools that are currently being used in Hollywood and within computer-generated graphics.

Credit: 1/2 unit
Time: One semester
Exam: Departmental
Prerequisite: None

Drawing Courses

Design & Drawing for Production (offered only on even years)

Through various team building and problem solving activities, students will build several hands-on projects throughout this course. Students will utilize Computer Aided Design (CAD) skills. They will learn sketching, geometric construction, orthographic projection, sectioning, pictorial drawings, and developments which are essential for success in today’s technical world. This course may be used for the art and music New York State graduation requirement.

Credit: 1 unit
Time: Full year
Exam: Departmental
Prerequisite: None

Students may be able to obtain college credit by electing to participate in the dual-credit program at Monroe Community College. Students may elect 3 college credits or 6 college credits.

Tuition: \$40.00 per credit hour for students who opt for credit.

Credit: 6 college credits

Production Drawing/CAD/CAM

Students develop skills to complete detail and assembly engineering drawings. Drawings will include both original and existing products. An emphasis will be placed on designs of products with parts that fit together. Students will learn about precision measuring devices and dimensional tolerance. This course also integrates Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM), operation and programming. Drawing will be completed on a 3-D CAD program.

Credit: 1/2 unit
Time: One semester
Exam: Departmental

Prerequisite: Design & Drawing for Production

Single Gender Introduction to Architecture

This course is part of Fairport's pilot initiative to address the gender gap in technology. The course curriculum is identical to Information Technology (with SUPA Option) but additional emphasis will highlight women's contributions in the field of Informational Technology.

Introduction to Architecture offers students the opportunity to build familiarity with design processes and the role played by Architects and designers in today's world. Students will produce floor plans, interior designs and sections, and elevations for an original house design. The design will be created using architectural tools, including the use of CAD software. In addition, students will study the history of architecture and the elements of building layout. An emphasis is placed on the components of architectural design. The application of energy conservation methods and renewable energy sources, such as wind power and passive solar systems, will be examined.

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Credit: 1/2 unit
Time: One semester
Exam: Departmental
Prerequisite: None

Students attending Alfred State College in the Department of Computer Imaging and Architectural Engineering Technology will be allowed to waive one credit of core course credit in Architectural Technology for CIAT 2201—Architectural Computer Graphic Application by obtaining a 80% cumulative grade point average in Introduction to Architecture and Architecture II.

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Credit: 1/2 unit
Time: One semester
Exam: Departmental
Prerequisite: None

Students attending Alfred State College in the Department of Computer Imaging and Architectural Engineering Technology will be allowed to waive one credit of core course credit in Architectural Technology for CIAT 2201—Architectural Computer Graphic Application by obtaining a 80% cumulative grade point average in Introduction to Architecture and Architecture II.

Technical Illustration

Students develop sketching skills through hands-on activities which include one and two-point perspective drawing techniques. Students will use an advanced computer graphics program and a 3-D computer program to complete digital portfolio projects. The emphasis of this course is on technical types of illustrations and portfolio development.

Credit: 1/2 unit
Time: One semester
Exam: Departmental
Prerequisite: None

Students attending Finger Lakes Community College to pursue a curriculum leading to an Associates Degree, may receive articulated credits (3 hours) for a Technology elective by obtaining a grade of 80% or better in Architecture II and Technical Drawing.

Architecture II /Engineering Drawing

Students design an energy-efficient home using the CAD system during the first marking period and construct an architectural model of the home during the second marking period. During the third and fourth marking periods, they use the CAD system for designing and problem solving. The course is designed on a contract basis, and each student selects a grade option at the beginning of the contract term.

Credit: 1 unit
Time: Full year
Exam: Departmental
Prerequisite: Architecture I

Students attending Alfred State College in the Department of Computer Imaging and Architectural Engineering Technology will be allowed to waive one credit of core course credit in Architectural Technology for CIAT 2201—Architectural Computer Graphic Application by obtaining a 80% cumulative grade point average in Architecture I and Architecture II.

Students attending Finger Lakes Community College to pursue a curriculum leading to an Associates Degree, may receive articulated credits (3 hours) for a Tech elective by obtaining a grade of 80% or better in Architecture II and Technical Drawing.

Engineering Courses

Pre-Engineering

Through real-world case studies, students will understand their ability to create the machines and systems which contribute to our culture and achievements. They focus on the practical application of scientific formulas and laws, an examination of the purpose of design, the application of research, implementation of a design, the building of a prototype, and the evaluation and analysis of a concept and implementation and redesign of the solution. This course is an alternative to the third-year of mathematics or science graduation requirement. This course may be used for one unit of math, science, or technology credit.

Credit: 1 unit
Time: Full year
Exam: Departmental
Prerequisite: None

Students may be able to obtain college credit by electing to participate in the dual-credit program at Monroe Community College.

Tuition: \$40.00 per credit hour

Credit: 3 college credits

Electronics

Students develop an understanding of electronics through hands-on practical experiments and activities. The students will explore the analog and digital components utilized in the field of electronics. Electronics takes a hands-on approach by utilizing textbook materials, computer simulation and building circuits for investigation and understanding. Students will explore careers and vocational opportunities in the Electronics industry.

Credit: 1/2 unit
Time: One semester
Exam: Departmental
Prerequisite: None

Students may be able to obtain college credit by electing to participate in the dual-credit program at Monroe Community College.

Tuition: \$40.00 per credit hour

Credit: 3 college credits

Principles of Engineering

Students will investigate real-world case studies to learn the major concepts, skills, and attitudes that are necessary foundation to all engineering endeavors. This course takes a hands-on approach to the development and understanding of the theories of engineering. The students will utilize the concepts and skills of sketching, computer-aided drawing, and basic machine operation to complete their experiments in engineering.

Credit: 1/2 unit

Time: One semester

Exam: Departmental

Prerequisite: Math II; open to students in grades 10-12

Green Energy Solutions

Cost of driving skyrockets! Carbon Emissions Causing Global Warming! These are typical headlines found in the press. But today and in the near future new greener and renewable sources of energy will be powering our cars and heating, cooling, and lighting our homes. This new frontier has also created a tremendous increase of new and high paying careers.

In this course students will explore a variety of emerging energies including: wind, solar, bio-fuel, nuclear, geothermal, hydrogen and fuel cell and others. They will learn about the possibilities and problems associated with each of these energies, and will examine the engineering necessary to build delivery systems for these new energy sources.

Credit: 1/2 unit

Time: One semester

Exam: Departmental

Prerequisite: None

Woodworking Courses

Woodworking *(replaces Woodworking Technology)*

Students will investigate the properties and materials, tools and equipment used in today's related woodworking industry. Efficient and safe operations of all equipment and machines in the wood lab will be a priority. Layout and design methods will be applied to develop projects from start to finish. Each student will develop three to four projects that utilize all the concepts of woodworking techniques and explore a variety of career opportunities.

Credit: 1/2 unit

Time: One semester

Exam: Departmental

Prerequisite: None

Design and Build *(replaces Designing with Wood and Cabinet Making)*

Advanced design techniques, processes, and tool / machine usage will be utilized in the course. Students have the choice of designing and constructing two projects (10 weeks each) or one large project (20 weeks). The choice of material is left up to the designer. There will be no cost when using the provided material (pine), if alternative materials are used the student will be responsible for the cost.

Credit: 1/2 unit

Time: One semester

Exam: Departmental

Prerequisite: Woodworking