TECHNOLOGY

TECHNOLOGY EDUCATION

The SCSD High School Technology program offers students of all academic levels opportunities to explore different avenues in the exciting world of technology. Students can choose to do an introductory course such as the Fundamentals of Technology, **fulfill their graduation Art requirement with Design and Drawing for Production (DDP),** or explore a variety of specific paths in technology. Students who are interested in a career in computers can follow the IT Essentials and/or Cisco Sequences and work towards obtaining different certifications. A wide variety of electives - such as Energy Applications, Graphic Communications, and Robotics - are offered to meet the interests of students as well as the needs of an ever-changing world. Students who are interested in architecture, construction, or engineering would want to take advantage of the Advanced Architectural Principles, Construction Technology, Engineering Principles, and IB Design Technology courses offered. If students are pursuing an Advanced Regents diploma, they can **substitute five units in Technology Education for the Foreign Language requirement.**

Courses recommended for 9th graders (but open to all grade levels)
Fundamentals of Technology (1/2 unit)
Electricity/ Electronics (1 unit)
Design and Drawing for Production (1 unit) – fulfills Arts requirement for graduation

Courses recommended for 10th – 12th graders - NO prerequisites (all ½ unit):
Construction Technology
Energy Applications
Graphic Communications
Introduction to Architecture
IT 1: Fundamentals - 3 UHS Credits, SCCC (CIS 110)
PC Manufacturing
Robotics
Web Design

Courses for 10th – 12th graders with prerequisites (½ unit unless marked):
Computer Programming for Tech
Engineering Principles
IB Design Tech HL Year 1 – 1 unit
IB Design Tech HL Year 2 – 1 unit
IT 2: Advanced - 3 UHS Credits, SCCC (CIS 111)
Yearbook – 1 unit

CISCO Sequence (all ½ unit)
CISCO I - 3 UHS Credits, SCCC (CIS 240)
CISCO II - 3 UHS Credits, SCCC (CIS 241)
CISCO III - 3 UHS Credits, SCCC (CIS 247)
CISCO IV - 3 UHS Credits, SCCC (CIS 247)

CTE TECHNOLOGY PATHWAYS

IT Essentials Pathway – 3 ½ credit sequence

IT Essentials is a hands on, career-oriented e-learning solution with an emphasis on practical experience to help students develop fundamental computer skills along with essential career skills. The program helps students prepare for entry-level IT career opportunities. Students will take the CompTIA A+ certification, which will also help distinguish them in the marketplace to advance their careers. The Comptia A+ certification is the industry recognized certification for entry level computer repair and support technicians.

IT ESSENTIALS PATHWAY

- Design and Drawing for Production (1 credit) and fulfills art requirement

- Electricity/Electronics - (1 credit)

- Career and Financial Management (½ credit)

- IT 1 & 2 - (½ credit & ½ credit) and 6 UHS Credits from SCCC

CCNA Pathway – 4 ½ credit sequence

Students will learn theory, design, implementation, and maintenance of computer networks. The program consists of six-1/2 unit courses (Cisco 1, 2, 3, and 4, Career and Financial Management, and Electricity/Electronics) and one full year course (Design and Drawing for Production) for a total sequence of four units. The courses prepare students to take industry recognized certification tests – either the Cisco Certified Entry level associate (CCENT) or the Cisco Certified Network Associate (CCNA).

CCNA PATHWAY

- Design and Drawing for Production (1 credit) and fulfills art requirement

- Electricity/Electronics - (1 credit)

- Career and Financial Management (½ credit)

- Cisco 1 & 2 - (½ credit & ½ credit) and 6 UHS Credits from SCCC

- Cisco 3 & 4 - (½ credit & ½ credit) and 6 UHS Credits from SCCC

CAREER AND FINANCIAL MANAGEMENT

(1/2 CREDIT)

This course is required by the NYS State Education Department for any student pursuing a sequence in career and technical education. The emphasis is on business and economic systems, career planning, selection and success, and financial literacy.

FUN-DAMENTALS OF TECHNOLOGY

(1/2 CREDIT)

Technology can be fun! Students will be introduced to a variety of topics in technology that form the foundation of our modern society. They will complete many different projects involving electronics, publishing, energy, design, and computer applications. Emphasis will be placed on developing organization, technical, presentation, and teamwork skills in a hands-on technology setting. One-fourth of the course will be dedicated to activities in career research and planning.

DESIGN & DRAWING FOR PRODUCTION (DDP)

(1 CREDIT) (FINE ART CREDIT)

Have you ever wondered how your cell phone went from and idea to a product?

Design and Drawing for Production (DDP) is an activity-based course which will teach you how products are created from start to finish. Students in DDP will develop solutions to various design or product problems using research, sketching, drawing and presentation techniques. Individual and group projects will emphasize the development of the critical thinking and encourage you to think creatively. The computer will be used to create original 3-D solutions. DDP may be used to satisfy the art requirement for graduation.

ELECTRICITY/ ELECTRONICS

(1 CREDIT) MAY BE USED AS SCIENCE CREDIT

Would this course spark your interest? The world of electronics surrounds us in our everyday lives. This class will provide students with an opportunity to master the basic theories of DC electronics and put those theories into practice through exciting and challenging lab projects and experiments. Applied math skills will be developed in the analysis of projects and experiments. Students will be given opportunities to design, build, operate, and test electronic projects in both individual and group project settings.

INTRODUCTION TO ARCHITECTURE

(1/2 CREDIT)

Open to grades 10, 11, and 12.

Are you interested in pursuing a career in Architecture? This course will introduce students to the fundamentals of architectural design. Students will learn and apply the concepts of planning, researching, developing, and evaluating architectural structures. One project will focus on the exciting and challenging process of designing a residential deck concluding with the building of an original scale model. Classwork will emphasize understanding and applying the fundamentals in both individual and group project work.

CONSTRUCTION TECHNOLOGY

(1/2 CREDIT)

Open to Grades 10, 11, 12

Do you like working with your hands? Do you like building things? Would you like to have a job that offers great pay? Have you ever thought about constructing your own home? This course is intended to introduce students to the basics of construction systems including concepts and applications in estimation, framing, foundations, electrical, plumbing, and interior finish. Class topics will include eco-friendly homes, security systems, smart homes, and other fascinating topics!

COMPUTER PROGRAMMING FOR TECHNOLOGY

(1/2 CREDIT)

Prerequisite: Jr/Sr or if the Sophmore is enrolled in Trig Acc-PreIB.

How did Bill Gates develop such an impressive collection of software? The answer is by computer programming! In this class, students will work in four distinct languages in order to develop a basic understanding of the common elements of programming. While you will not become an expert in any one language, you will gain a broad understanding of what it takes to develop a well-designed and fully functional program. Students will work individually as well as in small groups to complete the programming challenges. And who knows, perhaps YOU could be the next great programmer of the 21st century!

ENERGY APPLICATIONS

(1/2 CREDIT) MAY BE USED AS SCIENCE CREDIT

Open to Grades 10, 11, 12.

Is our world at risk of running out of energy? How will we supply the energy demanded by future generations? Our class will explore the past, present, and future of energy sources and applications. Is it possible to develop a solar powered cell phone? How does that

"french fry car" work? Hands on activities will help students understand the concepts in one of the hottest career growth areas in the new Tech Valley! If you've ever wondered watts up, this class is for you!

ENGINEERING PRINCIPLES

(½ CREDIT) MAY BE USED AS A SCIENCE CREDIT

Prerequisite: Jr/Sr or if the Sophmore is enrolled in Trig Acc-PreIB.

Have you ever thought about developing a new product that could change the world? The world needs enthusiastic, creative designers who are not afraid to dream big! If this sounds interesting, you should consider a career in the field of engineering. This class will provide students with an opportunity to look at the variety of exciting and challenging career paths in engineering. This is where you will solve real world problems by applying your math and science skills. Graduates of Schenectady High who work in engineering will visit this class to share their career experiences.

ROBOTICS 1 & 2

(1/2 CREDIT) MAY BE USED AS A SCIENCE CREDIT

Open to grades 10, 11, 12.

Is it possible that someday you might actually be able to have a robot that would do your homework? How has robotics changed our society and what are the future implications? Robotics will allow students to engage in fascinating applications of math and science to design, build, and program both radio-controlled and autonomous (self-guiding) robots. This class will give you a glimpse into your future as we continue to rely more on automation, artificial intelligence, and systems design to solve complex technological problems that we face as a society.

WEB DESIGN

(1/2 CREDIT)

Open to grades 10, 11 and 12.

When was the last time you added a new feature to your Facebook account? Would you like to go beyond what Facebook is capable of creating and develop your own web content? This is a one semester, project-based introduction to developing and presenting web-based information. While the primary focus of the class is on content development, students will discuss issues facing today's web professionals such as copyright, freedom of speech, and web security. Students will work with the elements of layout, content, navigation, and interface design as they complete individual, small group, and large group projects.

Students will also be required to present their work to the class for peer evaluation and review. By the time you complete this class, you should be ready to plan, develop, and maintain your own website!

PC SURGERY (PC MANUFACTURING)

(1/2 CREDIT)

Open to grades 10, 11, 12.

Have you ever started up your computer only to view the "blue screen of death?" What do you do now? PC surgery will teach you critical care knowledge that will let you bring your computer back to life! Don't be intimidated by your computer, PC Manufacturing will put you in control! EVERY STUDENT should take this course before graduation!

IT 1: FUNDAMENTALS OF HARDWARE & SOFTWARE

(1/2 CREDIT)
3 UHS CREDITS, SCCC (CIS 110)

Open to grades 10, 11, 12.

Did you know that computer hardware and software is the foundation of the 5 fastest growing careers over the next decade? This class will empower you with the skills to diagnose and repair hardware and software issues that can prevent your computer from operating at its full potential. Take IT 1 and start your own computer repair business!

IT 2: ADVANCED HARDWARE & SOFTWARE

(1/2 CREDIT)
3 UHS CREDITS, SCCC (CIS 111)

Prerequisite: IT 1 Fundamentals.

If you are considering a career in Information Technology, you should definitely consider taking this class to fully prepare yourself for the industry standard COMP-TIA exam. This class moves into more complex topics following IT 1 and will provide students with hands-on experiences in diagnosis, repair, and verification of hardware and software performance.

CISCO 1

3 UHS CREDITS, SCCC (CIS 240)
(1/2 CREDIT)

Open to grades 10, 11, 12.

Semester 1: You write an email and you click on send. Have you ever wondered what happens next? Cisco 1 will teach you! Students will explore various aspects of the Internet including the hardware and software required for connectivity. Hands on activities will include designing, building, and troubleshooting networks. IT careers are in high demand and this class will open your eyes to many of these opportunities.

CISCO II

3 UHS CREDITS, SCCC (CIS 241) (1/2 CREDIT)

Prerequisite: CISCO 1.

Semester 2: Routers and Routing Basics. Cisco 2 focuses on the configuration of router, network design and security. Topics include: Router user interfaces, components and configurations; Basics of IOS versions, naming and software backup; TCP/IP Protocol Suite, IP addressing and sub netting; Interior routing protocols- RIP; and Access Control Lists (ACLs).

CISCO III

MUST COMPLETE CISCO III AND IV FOR 3 UHS CREDITS, SCCC (CIS 247) (1/2 CREDIT)

Prerequisite: CISCO 2.

Semester 3: Switching Basics and Intermediate Routing. Cisco 3 expands students' knowledge of routing, network implementation and troubleshooting. The class includes extensive hands-on experiences with all the following topics: VLSM (Subnetting a subnet); Routing protocols – RIP Version 2, OSPF and EIGRP; Switching and VLANs; Spanning – Tree Protocol; and Network documentation, security and troubleshooting.

CISCO IV

MUST COMPLETE CISCO III AND IV FOR 3 UHS CREDITS, SCCC (CIS 247) (1/2 CREDIT)

Prerequisite: CISCO 3.

Semester 4: WAN Technologies. Cisco 4 introduces students to Wide Area Networks (WANs) and investigates all the following topics: WAN devices, encapsulation formats, and communication; PPP components, session establishment and authentication; ISDN uses, services and configuration; and Frame relay technology and configuration. These courses prepare students for the industry certifications CCENT and CCNA.

GRAPHIC COMMUNICATIONS

(½ CREDIT)

Open to Grades 10, 11, 12

Are you a photo bug? Do you have tons of photos and want to display them in a creative way? This course will introduce students to the amazing world of design for digital media. Students will have the opportunity to use digital cameras to create exciting class projects focusing on page layout, editing, digital video, and much more. This class will fully qualify students to be successful in the Yearbook class.

YEARBOOK

(1 CREDIT)

Have you ever been part of a team that accomplished the seemingly impossible? Would you like next year's Patriot to be the best yearbook ever? Well, that won't happen without your contribution! This course offers hands-on training in photography, copy writing, editing, page layout, and design. The course includes extensive use of the computer to produce the yearbook in a "camera ready" format. Students will work with the financial advisor to sell advertisements and market the yearbook in school and in the community. Students interested in careers in journalism, advertising, business, or any type of communications will find this course to be rewarding and valuable. You have an opportunity to be part of a lifetime of memories when you join our staff.

IB DESIGN TECHNOLOGY (HL/YEAR 1)

(1 CREDIT) MAY BE USED AS A SCIENCE CREDIT

Prerequisites: Successful completion of a Regents level Science exam (65 or higher) and minimum 85% attendance rate in the sophomore year.

B Design Technology is a rigorous, Group IV higher level course that is taught over two years. DT is designed to teach students how to adapt to the ever-changing world of technology and to approach the solution of real world problems through the application of the Design Cycle Model. This course is available to both Diploma Program and Certificate students.

IB DESIGN TECHNOLOGY (HL/YEAR 2)

(1 CREDIT) MAY BE USED AS A SCIENCE CREDIT

Prerequisites: Satisfactory progress on Design Tech Year 1 Internal Assessment at time of scheduling (verified by Year 1 instructors)

In Year 2 Design Technology, students perform further study in a broad range of topics relating to the principles of design. The IB Design Technology Exam is administered in May, and this course fulfills the Experimental Sciences requirement for the full IB Diploma. A key component of Year 2 is the completion of the Design Project, a 41 hour self-directed applied research project that pursues a comprehensive solution to a real world design problem. This course is available to both Diploma Program and Certificate students.