SPRING GROVE AREA SCHOOL DISTRICT

PLANNED COURSE OVERVIEW

Course Title: Informational Technology Essentials: PC Hardware and Software	**Length of Course:** 30 cycles
Grade Level(s): 9 - 12	**Periods Per Cycle:** 6
Units of Credit: 1	**Length of Period:** 43 minutes
Classification: Elective	**Total Instructional Time:** 129 hours

Course Description

This course will give students an opportunity to earn an industry recognized certification in the IT field of study. The Cisco course, IT Essentials, provides an introduction to the computer hardware and software skills needed to help meet the growing demand for entry-level ICT (Information and Communication Technology) professionals. The curriculum covers the fundamentals of personal computer (PC) technology, networking, and security, and also provides an introduction to advanced concepts. At the completion of the course, students will be given the opportunity to take the Computing Technology Industry Association (CompTIA) A+ certification test, which helps students differentiate themselves in the marketplace to advance their careers. In addition, the course provides a learning pathway to the Cisco Certified Network Associate (CCNA) Discovery curricula.

Instructional Strategies, Learning Practices, Activities, and Experiences

Teacher Demonstration	Posted Objectives and Agenda	Bell Ringer
Online Tutorials/Resources	Formal Assessments	Class Discussion
Critical Thinking	Guided Practice	Flexible Groups

Assessments

Hands-On Skill Test	Projects	Constructed Response Articles
Quizzes	Labs	Packet Tracer Exercises
Chapter Exams		

Materials/Resources

Computer lab with sufficient bench space for assembly and repair of PC's	Maximum student numbers of 15, with a ratio of one lab PC per student	Internet Connections with Window 7 Operating Systems Basic hand tools for assembly and repair of PC's

Adopted: 5/21/12
Revised: 5/21/18; 12/9/20

Introduction to the Personal Computer	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Personal Computer Systems B. Computer Components C. Configuration of Specialized Computer Systems Related Vocabulary: fundamentals components central processing unit (CPU) internal external ports resources certification Essential Questions: How can you explain information technology certifications? What parts are needed to describe a computer system? What are the system resources within a computer system?	**3.4.12.A1** ~ Compare and contrast the rate of technological development over time. **3.4.12.C3** ~ Apply the concept that many technological problems require a multi-disciplinary approach. **3.4.12.E4** ~ Synthesize the effects of information and communication systems and subsystems as an integral part of the development of the Information Age.

Safe Lab Procedures and Tool Use	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Safe Lab Procedures B. Proper Use of Tools Related Vocabulary: hazard potential damage hardware environment contamination Essential Questions: Why is it important to have safe working conditions and procedures in place? How can the tools and software used for personal computer systems be identified? What is the proper way to implement safe tool usage when working with computer equipment?	**3.4.12.A1** ~ Compare and contrast the rate of technological development over time. **3.4.12.B1** ~ Analyze ethical, social, economic, and cultural considerations as related to the development, selection, and use of technologies. **3.4.12.C3** ~ Apply the concept that many technological problems require a multi-disciplinary approach. **3.4.12.E7** ~ Analyze the technologies of prefabrication and new structural materials and processes as they pertain to constructing the modern world.

Computer Assembly Step-by-Step	
CONTENT/KEY CONCEPTS	
A. Assemble the Computer B. Boot the Computer C. Upgrade and Configure a Computer <u>Related Vocabulary</u>: assembly components motherboard heat sink CPU ram drives wireless boot bios <u>Essential Questions:</u> What are the step-by-step procedures for assembling computer? How do you boot up a computer for the first time?	**3.4.12.C3** ~ Apply the concept that many technological problems require a multi-disciplinary approach. **3.4.12.E6** ~ Compare and contrast the importance of science, technology, engineering, and math (STEM) as it pertains to the manufactured world.

Basics of Preventive Maintenance and Troubleshooting	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Preventive Maintenance B. Troubleshooting Process <u>Related Vocabulary</u>: troubleshoot data determine implement functionality preventive maintenance document <u>Essential Questions</u>: What is the purpose of preventive maintenance? What are the steps of the troubleshooting process?	**3.4.12.B2** ~ Illustrate how, with the aid of technology, various aspects of the environment can be monitored to provide information for decision making. **3.4.12.C3** ~ Apply the concept that many technological problems require a multi-disciplinary approach.

Fundamental Operating Systems	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Modern Operating Systems B. Operating System Installation Related Vocabulary: concepts systems limitations compatibility applications platform default sequence registry directory navigate administrative Essential Questions: What is the purpose of an operating system? How do you install an operating system? What are some common preventive maintenance techniques for operating systems?	**3.4.12.A2** ~ Describe how management is the process of planning, organizing, and controlling work. **3.4.12.C2** ~ Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly. **3.4.12.C3** ~ Apply the concept that many technological problems require a multi-disciplinary approach.

Fundamental Laptops and Portable Devices	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Laptop Components B. Laptop Configuration C. Mobile Device Hardware <u>Related Vocabulary</u>: smartphone personal digit assistant (PDA) docking station motherboard installation mobile devices components <u>Essential Questions</u>: How can laptops and other portable devices be described? What are the components of a laptop? How can you compare and contrast desktop and laptop components?	**3.4.12.A2** ~ Describe how management is the process of planning, organizing, and controlling work. **3.4.12.A3** ~ Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM). **3.4.12.E4** ~ Synthesize the effects of information and communication systems and subsystems as an integral part of the development of the Information Age.

Fundamental Printers and Scanners	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Common Printer and Scanner Features B. Installing and Configuring Printers and Scanners C. Sharing Printers <u>Related Vocabulary</u>: capabilities interfaces local port network port firmware default settings <u>Essential Questions</u>: What are the different types of printers and scanners currently available? How do you install and configure a printer and scanner? How do you apply troubleshooting techniques for common printer and scanner problems?	**3.4.12.A2** ~ Describe how management is the process of planning, organizing, and controlling work. **3.4.12.A3** ~ Demonstrate how technological progress promotes the advancement of science, technology, engineering, and mathematics (STEM). **3.4.12.E4** ~ Synthesize the effects of information and communication systems and subsystems as an integral part of the development of the Information Age.

Fundamental Networks	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Principles of Networking B. Network Standards C. Physical Components of a Network D. Basic Networking Concepts and Technologies Related Vocabulary: principles define benefits peer-to-peer data transmission internet protocol (IP) address applications topologies architectures ethernet modem connectivity Essential Questions: What are the different types of computer networks? What are the names, purposes, and characteristics of other technologies used to establish connectivity? What are preventive maintenance techniques for networks?	**3.4.12.A2** ~ Describe how management is the process of planning, organizing, and controlling work. **3.4.12.A3** ~ Demonstrate how technological progress promotes the advancement of science, technology, engineering, and mathematics (STEM). **3.4.12.E4** ~ Synthesize the effects of information and communication systems and subsystems as an integral part of the development of the Information Age.

Fundamental Security	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Security Threats B. Security Procedures C. Common Preventive Maintenance Techniques for Security <u>Related Vocabulary</u>: security threats virus worms Trojans spyware grayware spam engineering recycling <u>Essential Questions</u>: Why is security important in a computer system? What are some serious threats to a computer system? How can security procedures be used in a computer system?	**3.4.12.A2** ~ Describe how management is the process of planning, organizing, and controlling work. **3.4.12.A3** ~ Demonstrate how technological progress promotes the advancement of science, technology, engineering, and mathematics (STEM). **3.4.12.B1** ~ Analyze ethical, social economic, and cultural considerations as related to the development, selection, and use of technologies.

Communications Skills	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Communication Skills and the Informational Technology (IT) Professional B. Ethical and Legal Issues in the IT Industry C. Call Center Technicians <u>Related Vocabulary</u>: relationship professional display stress focus observe agreement business <u>Essential Questions</u>: What is the relationship between communication and troubleshooting? How are good communication skills and professional behavior related? What are the ethical and legal aspects of working with computer technology?	**3.4.12.B1** ~ Analyze ethical, social, economic, and cultural considerations as related to the development, selection, and use of technologies. **3.4.12.B2** ~ Illustrate how, with the aid of technology, various aspects of the environment can be monitored to provide information for decision making. **3.4.12.C3** ~ Apply the concept that many technological problems require a multi-disciplinary approach.

Advanced Personal Computers and Troubleshooting	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Computer Components and Peripherals B. Operating Systems C. Networks D. Security <u>Related Vocabulary</u>: overview remote characteristics safety replacement storage input output inspect summary <u>Essential Questions</u>: What are the definitions of field, remote, and bench technician jobs? How can safe lab and tool procedures be used? How can you upgrade and configure personal computers components and peripherals?	**3.4.12.A1** ~ Compare and contrast the rate of technological development over time. **3.4.12.A3** ~ Demonstrate how technological progress promotes the advancement of science, technology, engineering, and mathematics (STEM). **3.4.12.E6** ~ Compare and contrast the importance of science, technology, engineering and math (STEM) as it pertains to the manufactured world. **3.4.12.A2** ~ Describe how management is the process of planning, organizing, and controlling work. **3.4.12.C2** ~ Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.