Computer Hardware & Software

Career Cluster	Information Technology
Course Code	10251
Prerequisite(s)	Introduction to Information Technology Careers (Recommended), Computer Applications (Recommended)
Credit	.5-1
Program of Study and Sequence	Computer Hardware & Software is recommended as a prerequisite for two pathways: Programming and Networking & Hardware.
Student Organization	Skills USA, Future Business Leaders of America, CyberPatriots
Coordinating Work-Based Learning	Job Shadowing, Guest Speakers, Tours, Personal Portfolios
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Networking Systems & Information Support Pathway Endorsement; Computer Repair & Maintenance Endorsement; K-12 Educational Technology; K-12 Classroom Technology
Resources	

Course Description: The Computer Hardware & Software course will prepare students to become more knowledgeable about the integral components of a computer system. Topics covered in the class include individual hardware components, upgrading and troubleshooting a computer, installing operating systems, and configuring basic network services.

Program of Study Application

Computer Hardware & Software is cluster course leading to the Programming and Networking & Hardware pathways.

Course Standards

Indicator # CIT 1   Apply knowledge of hardware design, operation and maintenance

Webb Level	Sub-indicator	Integrated Content
Two	CIT 1.1 Understand how to design and assemble systems that use computer programs to interact with hardware Examples: • Demonstrate knowledge of the functions of internal components • Identify primary personal computer (PC) components and functions of each • Demonstrate knowledge of how hardware components interact and how conflicts arise • Access needed information using manufacturers' references • Secure supplies and resources • Respond to error messages and symptoms of hardware failures • Install boards to support peripherals • Connect peripherals to central processing unit (CPU) • Employ appropriate safety precautions when working with PCs • Document system installation activities • Backup system configuration • Test functionality of components and verify system operation	

| Three | CIT 1.2 Install and configure essential computer hardware and software components

Examples:
• Demonstrate the use and repair/replacement of volatile and nonvolatile memory
• Test system using diagnostic tools/software
• Differentiate between hardware and software failure
• Update flash memory basic input/output system (BIOS)
• Optimize hard drive
• Gather information from end user by using different questioning techniques
• Conduct appropriate diagnostic tests
• Troubleshoot malfunctioning hardware
• Recover data and/or files
• Restore system to normal operating standards | Could be physically installed or simulated |

Notes:

Indicator # CIT 2   **Understand the relationships among computer hardware, networks, and operating systems**

Webb Level	Sub-indicator	Integrated Content
One	CIT 2.1 Identify new IT technologies relevant to computer hardware Examples: • Assess the importance of new technologies for future developments • Identify system-processing requirements • Identify data communication trends and major current issues	
Two	CIT 2.2 Determine compatibility of hardware and software Examples: • Identify benchmark metrics for performance • Determine if hardware meets software requirements • Understand the evolution of hardware and software advances	
Two	CIT 2.3 Understand the difference between an operating system, utility programs, and application software Examples: • Install an operating system • Use utility program to diagnose and correct problems • Install/un-install and configure various application software	Could be physically installed or simulated

Notes:

Indicator # CIT 3   **Understand basic networking services**

Webb Level	Sub-indicator	Integrated Content
Two	CIT 3.1 Understand the basics of Internet protocol (IP) addressing Examples: • Configure a computer for a static IP address, subnet mask, default gateway, and domain name system (DNS) • Understand the difference between static and dynamic host configuration protocol (DHCP) addressing	
Four	CIT 3.2 Troubleshoot basic network problems Examples: • Resolve IP address conflicts • Use network utility commands to troubleshoot problems	

Notes:

Indicator # CIT 4   Explore Careers in information technology

Webb Level	Sub-indicator	Integrated Content
One	CIT 4.1 Identify skills, interests, and abilities related to information technology Examples: • Job shadowing, guest speakers, and online resources	Job Shadowing, Guest Speakers, Tours
Two	CIT 4.2 – Identify personal interests using survey instruments with information technology occupations Example: • Use South Dakota MyLife to research and compare careers	Personal Portfolios
Three	CIT 4.3 – Research labor market information for information technology Examples: • Write a short essay citing demographics, wages and geographical locations	
Two	CIT 4.4 Demonstrate necessary job skills needed for Information and Technology industries Examples: • Attendance and punctuality • Positive attitude • Positive work ethic • Use of proper social skills • Display ability to work as part of team and take direction from others	

Notes: