

# Computer Servicing Technology Mississippi Curriculum Framework

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The Office of Curriculum and Instruction (OCI) was founded in 2013 under the Division of Workforce, Career, and Technical Education at the Mississippi Community College Board (MCCB). The office is funded through a partnership with The Mississippi Department of Education (MDE), who serves as Mississippi's fiscal agent for state and federal Career and Technical Education (CTE) Funds. The OCI is tasked with developing statewide CTE curriculum, programming, and professional development designed to meet the local and statewide economic demand.

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## RESEARCH ABSTRACT

The curriculum framework in this document reflects the changes in the workplace and a number of other factors that impact local vocational–technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U.S. Department of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

This curriculum was last validated and approved in 2010. In the fall of 2015, the Office of Curriculum and Instruction (OCI) met with instructors and industry representatives in Central and Southern MS. Program faculty, administrators, and industry members were consulted regarding industry workforce needs and trends. An industry questionnaire was used to gather feedback concerning the trends and needs, both current and future, of their field. Industry members stated the curriculum was suitable, but wanted to encourage students who complete the program to continue becoming certified in additional computer servicing areas. Likewise, industry members emphasized the rapid changes taking place in the field and suggested more frequent revisions to the curriculum.

Some changes to the Computer Servicing Technology Curriculum document include: (1) mapping the curriculum to the objectives outlined for numerous CompTIA certifications including CompTIA A+, CompTIA Mobility +, CompTIA Network+, CompTIA Server+, CompTIA Cloud+, and CompTIA Security+, (2) adding Server Administration I, Server Administration II, Security Fundamentals, Mobile Device Support I, Mobile Device Support II, Cloud Computing I, and Cloud Computing II to the core curriculum (3) adding Cyber Crime and Computer Forensics to Technical Electives, (4) changing Basic Computer Hardware to Basic IT Hardware, PC Diagnostics and Troubleshooting to IT Diagnostics and Troubleshooting, and Computer Servicing Lab I and II to IT Servicing Lab I and II, and (5) updating course objectives to reflect the current industry needs in computer servicing fields.

## REVISION HISTORY

2010 - Research & Curriculum Unit, Mississippi State University

2016 - Office of Curriculum & Instruction, Mississippi Community College Board

## ADOPTION OF NATIONAL CERTIFICATION STANDARDS

CompTIA is a vendor neutral provider of IT certifications. At the time of this revision, CompTIA A+ (2015 edition) comprises CompTIA A+220-901 and CompTIA A+ 220-902. The following overview has been prepared based directly on information from the CompTIA A+ certification website at [www.CompTIA.org](http://www.CompTIA.org).

The certification covers both hardware and software fundamentals that are needed by IT professionals in support and service technician roles. CompTIA A+ 220-901 covers computer technology fundamentals, such as PC installation, configuration, mobile devices, and networking as well as safety procedures and prohibited content. CompTIA A+ 220-902 covers installing and configuring PC and mobile operating systems, as well as common functions in networking, email and security.

In order to receive CompTIA A+ certification a candidate must pass two exams. The first exam is CompTIA A+ 220-901 Certification Exam. The CompTIA A+ 220-901 and CompTIA A+ 220-902 examinations measures necessary competencies for an entry-level IT professional with the equivalent knowledge of at least 12 months of hands-on experience in the lab or field. Successful candidates will have the knowledge required to assemble components based on customer requirements, install, configure and maintain devices, PCs and software for end users, understand the basics of networking and security/forensics, properly and safely diagnose, resolve and document common hardware and software issues while applying troubleshooting skills. Successful candidates will also provide appropriate customer support; understand the basics of virtualization, desktop imaging, and deployment.

CompTIA A+ is accredited by ANSI to show compliance with the ISO 17024 Standard and, as such, undergoes regular reviews and updates to the exam objectives.

For more information related to CompTIA examinations, please visit [www.CompTIA.org](http://www.CompTIA.org).

## ARTICULATION

During the consultation process with Computer Servicing Technology instructors, it was decided that the secondary Information Technology pathway curriculum lacked sufficient focus in particular topic matter to be able to articulate to the Computer Servicing Technology program. Therefore, no articulation agreement could be established for this program.

## INDUSTRY JOB PROJECTION DATA

Computer Installation and Repair Technologies occupations require an education level of a postsecondary career and technical certificate. There is a 6.62% decrease in occupational demand at the regional level and a 3.96% decrease at the state level for Computer, Automated Teller, and Office Machine Repairers. Median annual income for Computer, Automated Teller, and Office Machine Repairers is \$32,406.40. There is a 2.69% increase in occupational demand at the regional level and a 10.34% increase in demand at the state level for Electrical and Electronics Repairers of Commercial and Industrial Equipment. Median annual income for the occupation is \$48,339.20. A summary of occupational data from the State Workforce Investment Board Data Center is displayed below:

**Table 1: Education Level**

Program Occupations	Education Level
Computer, Automated Teller, and Office Machine Repairers	Postsecondary Career and Technical Award
Electrical and Electronics Repairers, Commercial and Industrial Equipment	Postsecondary Career and Technical Award

**Table 2: Occupational Overview**

	Region	State	United States
2010 Occupational Jobs	1103	1337	17,1730
2020 Occupational Jobs	1075	1367	17,0264
Total Change	-28	30	-1466
Total % Change	-2.54%	2.24%	-0.85%
2010 Median Hourly Earnings	\$19.41	\$19.53	\$21.63
2010 Median Annual Earnings	\$40,372.80	\$40,629.78	\$44,997.55
Annual Openings	-2	3	-146

**Table 3: Occupational Breakdown**

Description	2010 Jobs	2020 Jobs	Annual Openings	2010 Hourly Earnings	2010 Annual Earnings 2,080 Work Hours
Computer, Automated Teller, and Office Machine Repairers	619	578	-4	\$15.58	\$32,406.40
Electrical and Electronics Repairers, Commercial and Industrial Equipment	484	497	1	\$23.24	\$48,339.20
<b>TOTAL</b>	<b>1103</b>	<b>1075</b>	<b>-2</b>	<b>\$19.41</b>	<b>\$40,372.80</b>

**Table 4: Occupational Change**

Description	Regional Change	Regional % Change	State % Change	National % Change
Computer, Automated Teller, and Office Machine Repairers	-41	-6.62%	-3.96%	-3.85%
Electrical and Electronics Repairers, Commercial and Industrial Equipment	13	2.69%	10.34%	3.86%



## TECHNICAL SKILLS ASSESSMENT

Colleges should report the following for students who complete the program with a career certificate, technical certificate, or an Associate of Applied Science Degrees for technical skills attainment. To use the approved Alternate Assessment for the following programs of study, colleges should provide a Letter of Notification to the Director of Career Technical Education at the MS Community College Board. Please see the following link for further instructions: <http://www.mccb.edu/wkfEdu/CTDefault.aspx>.

CIP Code	Program of Study	
47.0104	Computer Installation and Repair Technologies	
Level	Standard Assessment	Alternate Assessment
Career	MS-CPAS-2 Postsecondary Computer Servicing Technology: Year 1	CompTIA A+ 220-901
Technical/AAS	MS-CPAS-2 Postsecondary Computer Servicing Technology: Year 2	CompTIA A+ 220-902

Through successful coursework completion, students will acquire the foundational knowledge for taking several CompTIA certification examinations. Courses from the Computer Servicing Technology curriculum have been mapped to the objectives outlined for numerous CompTIA certifications. More details about each certificate can be found at <http://certification.comptia.org/>. The following chart highlights the course content areas, courses, and the corresponding certification possibilities. The course program sequence can be found on the following pages.

Content Areas	Course	Certificate
IT Support	CST 1123 Basic IT Hardware CST 1333 Operating Systems CST 2113 IT Servicing Lab I CST 2223 IT Servicing Lab II CST 2913 Special Projects	CompTIA A+
Mobile Computing Support	CST 1913 Mobile Device Support I CST 1923 Mobile Device Support II	CompTIA Mobility+
Network Support	CST 1213 Networking I CST 2223 Networking II	CompTIA Network+
Server Administration Support	CST 1713 Server Administration I CST 1813 Server Administration II	CompTIA Server+
Cloud Computing Support	CST 2413 Cloud Computing I CST 2423 Cloud Computing II	CompTIA Cloud+
Networking Security	CST 1613 Security Fundamentals	CompTIA Security+

## ONLINE AND BLENDED LEARNING OPPORTUNITIES

Course content includes lecture and laboratory semester credit hours. Faculty members are encouraged to present lecture related content to students in an online or blended learning environment. Training related to online and blended learning will be available to faculty members through the MS Community College Board.

## INSTRUCTIONAL STRATEGIES

Instructional strategies for faculty members implementing the curriculum can be found through the Office of Curriculum and Instruction's professional development.

## ASSESSMENT STRATEGIES

The Office of Curriculum and Instruction's professional development offer assessment strategies to faculty members implementing the curriculum. Additionally, standards were included in course content when appropriate.

## CREDIT BY EXAMINATION

Credit by examination will be considered for courses that correlate with the Computer Servicing Technology Program.

## PROGRAM DESCRIPTION

The Computer Servicing Technology program will provide students with the required skills and expertise to be employable as computer and IT support specialists to interface with IT hardware, communications, and mobile technology resources. The program prepares individuals to install, maintain, service, and diagnose operational problems in PC hardware or mobile IT systems arising from software, mechanical, or electrical malfunctions. In addition to PC and mobile support, further emphasis is placed on support of computer networks, server maintenance, and cloud technologies. Courses in the IT Specialist Technician program describe the skills, equipment, software, and hardware tools to properly support the information technology industry. This program will also emphasize oral and written communication skills and professional skills necessary for IT Support Specialists.

This program is mapped to CompTIA's A+ certification objectives and supports student certification for A+. The industry standards are taken from the Computing Technology Industry Association, CompTIA A+ Practical Application (Exam Number: 220-901) objectives, and the CompTIA A+ Essentials (Exam Number: 220-902) objectives. CompTIA A+ Certification Exam Objectives can be downloaded from <http://certification.comptia.org/docs/default-source/exam-objectives/comptia-a-plus-220-901.pdf> and <http://certification.comptia.org/docs/default-source/exam-objectives/comptia-a-plus-220-902.pdf>.

Computer Servicing Technology is a two-year program of study that requires courses in the career–technical core, designated areas of concentration, and the academic core. Students who successfully complete a minimum of 30 semester hours in computer servicing technology courses may earn a career certificate. Students who successfully complete a minimum of 45 semester hours in computer servicing technology courses may earn a technical certificate. Successful completion of a minimum of 60 semester credit hours of course work in a two-year program leads to an Associate in Applied Science degree.

# SUGGESTED COURSE SEQUENCE

## Accelerated Pathway Credential

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
CST 1123	Basic IT Hardware	3	2	4	75	30	45	
CST 1213	Networking I	3	2	2	60	30	30	
CST 1333	Operating Systems	3	2	2	60	30	30	
	Instructor Approved Technical Electives	6						
	<b>TOTAL</b>	<b>15</b>						

## Career Certificate Required Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
CST 1123	*Basic IT Hardware	3	2	2	60	30	30	CompTIA A+ or equivalent CompTIA exam
CST 1213	*Networking I	3	2	2	60	30	30	
CST 1333	*Operating Systems	3	2	2	60	30	30	
CST 1713	Server Administration I	3	2	2	60	30	30	
CST 1813	Server Administration II	3	2	2	60	30	30	
CST 1913	*Mobile Device Support I	3	2	2	60	30	30	
CST 2113	IT Servicing Lab I	3	2	2	60	30	30	
CST 2123	IT Servicing Lab II	3	2	2	60	30	30	
CST 2223	*Networking II	3	2	2	60	30	30	
CST 2413	Cloud Computing I	3	2	2	60	30	30	
	<b>TOTAL</b>	<b>30</b>						

## Technical Certificate Required Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
CST 1613	*Security Fundamentals	3	2	2	60	30	30	CompTIA A+ or equivalent CompTIA exam
CST 1923	*Mobile Device Support II	3	2	2	60	30	30	
CST 2423	*Cloud Computing II	3	2	2	60	30	30	
	Instructor Approved Technical Electives	6	2	2	60	30	30	
	<b>TOTAL</b>	<b>15</b>						

\*These courses will be tested on MS-CPAS2.

## Technical Electives

Course Number		Semester Credit Hours	SCH Breakdown		Total Contact Hours	Contact Hour Breakdown		Certification Information
			Lecture	Lab		Lecture	Lab	Certification Name
TCT 2314	Digital Communications I	4						
TCT 2324	Digital Communications II	4						
TCT 1114	Fundamentals of Telecommunications	4						
IST 1154	Web and Programming Concepts	4						
CST 1154	Web and Programming Concepts	4	2	4	90	30	60	
BOT 1173	Introduction to Microsoft Office	3						
CST 1114	Basic Electronics	4	2	4	90	30	60	
CST 1323	Digital Electronics	4	2	4	90	30	60	
CST 2134	IT Diagnostics & Troubleshooting	4	2	4	90	30	60	
CST 2613	Cyber Crime	3	2	2	60	30	30	
CST 2623	Computer Forensics	3	2	2	60	30	30	
CST 292(1-6)	Supervised Work Experience	1-6						
CST 291(1-3)	Special Projects	1-3						
WBL 191(1-3) WBL 192(1-3) WBL 193(1-3) WBL 291(1-3) WBL 292(1-3) WBL 293(1-3)	Work-Based Learning	1-6						

## General Education Core Courses

To receive the Associate of Applied Science Degree, a student must complete all of the required coursework found in the Career Certificate option, Technical Certificate option and a minimum of 15 semester hours of General Education Core. The courses in the General Education Core may be spaced out over the entire length of the program so that students complete some academic and Career Technical courses each semester or provided primarily within the last semester. Each community college will specify the actual courses that are required to meet the General Education Core Requirements for the Associate of Applied Science Degree at their college. The Southern Association of Colleges and Schools (SACS) Commission on Colleges Standard 2.7.3 from the Principles of Accreditation: Foundations for Quality Enhancement<sup>1</sup> describes the general education core.

**Section 2.7.3** In each undergraduate degree program, the institution requires the successful completion of a general education component at the collegiate level that (1) is substantial component of each undergraduate degree, (2) ensures breadth of knowledge, and (3) is based on a coherent rationale. For degree completion in associate programs, the component constitutes a minimum of 15 semester hours or the equivalent. These credit hours are to be drawn from and include at least one course from the following areas: humanities/fine arts, social/behavioral sciences, and natural science/mathematics. The courses do not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession.

<sup>1</sup>

Southern Association of Colleges and Schools Commission on Colleges. (2012). *The principles of accreditation: Foundations for quality enhancement*. Retrieved from <http://www.sacscoc.org/pdf/2012PrinciplesOfAccreditation.pdf>

**General Education Courses**

			SCH Breakdown			Contact Hour Breakdown	
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab
	Humanities/Fine Arts	3					
	Social/Behavioral Sciences	3					
	Math/Science	3					
	Other academic courses per local community college requirements for AAS degree.	6					
	<b>TOTAL</b>	<b>15</b>					

# COMPUTER SERVICING TECHNOLOGY COURSES

**Course Number and Name:** CST 1114 Basic Electronics

**Description:** Concepts of electronics. Topics include DC and AC fundamentals, instrument and test equipment familiarization, soldering, and terminology

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
4	2	4	90

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Explain and apply general safety procedures.
  - a. Apply proper safety techniques.
  - b. Explain OSHA safety standards.
2. Use and operate test equipment.
  - a. Use test instruments.
  - b. Explain the causes and effects of current and voltage circuit loading.
  - c. Describe the difference between analog and digital multimeters.
  - d. Discuss the advantages and disadvantages of analog and digital multimeters.
  - e. Explain zeroing the ohmmeter prior to use and effects of battery drain on its accuracy.
  - f. Demonstrate troubleshooting techniques.
3. Apply soldering and desoldering techniques.
  - a. Apply soldering and desoldering techniques.
  - b. Apply solderless connections.
4. Apply principles of electrical circuits.
  - a. Write numbers in scientific and engineering notation.
  - b. Perform mathematical manipulations with numbers expressed in engineering notation.
  - c. Explain the basic structure of matter.
  - d. Explain the laws of electrical charge.
  - e. Differentiate among conductors, semiconductors, and insulators.
  - f. Determine resistor types, value, tolerance, and power rating.
5. Explain and utilize Ohm's law.
  - a. Explain the relationship among voltage, current, and resistance in a DC circuit.
  - b. State three equations used to express Ohm's law.
  - c. Analyze circuit parameters using Ohm's law.
  - d. Explain how power is developed in a circuit.
  - e. State three forms of power equations.
  - f. Demonstrate techniques for determining a power.
6. Analyze and evaluate series circuits, parallel circuits, and series-parallel circuits.

- a. Identify series circuits.
  - b. Compute total resistance of a series circuit.
  - c. Compute current in a series circuit using Ohm's law.
  - d. Identify parallel circuits.
  - e. Compute total resistance of a parallel circuit.
  - f. Utilize Ohm's law to solve circuit parameters of a parallel DC circuit.
  - g. Differentiate between series and parallel in a series-parallel resistive circuit.
  - h. Compute total resistance of a series-parallel circuit.
7. Analyze a sine wave, and explain its characteristics and application to AC circuits.
- a. Explain and calculate the following AC values: period, frequency, time, angle, instantaneous values of voltage and current, peak, peak-to-peak voltage and current, RMS voltage and current, average voltage and current, and power.
  - b. Analyze AC resistive circuits and solve for voltage drops, branch currents, and power dissipations.
  - c. Explain the oscilloscope's ability to measure AC voltage and frequency.
  - d. Use multimeters to measure AC voltage and current.
  - e. Explain electrical noise.



**Course Number and Name:** CST 1123 Basic IT Hardware

**Description:** A survey of computer hardware components. Topics include hardware compatibility, system architecture, input devices, video displays and adapters, disk drives, and other related peripherals.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Demonstrate and practice general safety procedures in the school and work-site environments.
2. Discuss basic elements of computer maintenance.
3. Perform system disassembly/inspection.
  - a. Explain the importance of motherboard components, their purpose, and properties.
  - b. Compare and contrast various RAM types and their features.
  - c. Install and configure PC expansion cards.
  - d. Install and configure storage devices and use appropriate media.
  - e. Install various types of CPUs and apply the appropriate cooling methods.
  - f. Compare and contrast various PC connection interfaces, their characteristics and purpose.
  - g. Identify common PC connector types and associated cables.
4. Install a power supply based on given specifications.
5. Select the appropriate components for a custom PC configuration, to meet customer specifications or needs.
6. Compare and contrast types of display devices and their features.
7. Install and configure common peripheral devices.

**Course Number and Name:** CST 1154 Web and Programming Concepts

**Description:** Concepts of telephony, local area networks, wide area networks, data transmission, and topology methods.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
4	2	4	90

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Design a Web page using HTML and/or XHTML.
  - a. Explain Web page creation.
  - b. Contrast text editors and GUI editors.
  - c. Explain HTML and XHTML.
  - d. Explain HTML and/or XHTML coding.
  - e. Demonstrate graphical elements.
  - f. Describe the use of hyperlinks.
  - g. Explain the use of tables.
  - h. Discuss forms.
  - i. Evaluate image techniques.
  - j. Explore the use of frames.
  - k. Demonstrate Web page layout and elements.
  - l. Demonstrate navigation concepts.
  - m. Research the standards organizations.
  - n. Demonstrate Web site usability testing.
2. Demonstrate cascading style sheets (CSS).
  - a. Use CSS language to build cascading style sheets.
  - b. Examine basic CSS techniques.
  - c. Apply advanced CSS techniques.
3. Use program design tools
4. Discuss structured or modular programming.
5. Describe the philosophy of object-oriented programming
6. Create applications using program development steps.

**Course Number and Name:** CST 1213 Networking I

**Description:** Concepts of telephony, local area networks, wide area networks, data transmission, and topology methods.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Introduce safety concerns.
2. Investigate career opportunities.
3. Analyze hardware, media, and software.
  - a. Review basic network principles.
  - b. Describe network topologies.
  - c. Discuss, operate, and troubleshoot wiring.
  - d. Discuss basic communications.
  - e. Discuss the future of communications.
4. Describe ISO/OSI model.
5. List and describe protocols.
6. Discuss Internetworking devices.
7. Examine LAN/WAN testing and analysis procedures.

**Course Number and Name:** CST 1323 Digital Electronics

**Description:** Number systems, logic circuits, counters, registers, memory devices, combination logic circuits, Boolean algebra, and a basic computer system.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Perform mathematical operations in digital number systems.
  - a. Convert between binary, octal, hex, and decimal values.
  - b. Add and subtract binary, octal, and hex numbers.
  - c. Subtract binary numbers using both ones and twos complements.
  - d. Generate and interpret even and odd parity.
  - e. Use the terms bit, byte, MSB, LSB, and nibble appropriately.
  - f. Encode and decode ASCII codes from code charts.
2. Classify logic gates, and explain their functions.
  - a. Describe and complete truth tables for logic gates.
  - b. Sketch schematic diagrams for logic gates.
  - c. Solve timing diagrams for logic gates.
  - d. Apply procedures to protect devices against electrostatic discharge (ESD).
  - e. Wire and test logic gates.
  - f. Write Boolean expression for logic gates.
3. Analyze logic circuits.
  - a. Construct, develop, and interpret combinational logic circuits.
  - b. Construct, develop, and interpret sequential logic circuits.
  4. Minimize logic circuits using Boolean algebra and Karnaugh mapping.
    - a. Write and describe the Boolean algebra theorems.
    - b. Apply DeMorgan's theorem to convert between OR and AND logic.
    - c. Apply Boolean algebra to minimize given Boolean expressions.
    - d. Convert between sum of products and product of sums.
    - e. Use Karnaugh maps to simplify Boolean expressions.
5. Analyze principles and operations of digital display devices.
  - a. Construct and demonstrate seven-segment LED digital displays.
  - b. Describe the principle at operation for multiplying multidigit displays.
  - c. Contrast LED and LCD digital display devices.
  6. Explain the operation of basic memory circuits.
    - a. Describe the characteristics of memory types including static RAM, dynamic RAM, PROM, and EPROM.
    - b. Interpret manufacturers' data sheets for memory integrated circuits.

**Course Number and Name:** CST 1333 Operating Systems

**Description:** Study of operating systems. Emphasis will be placed on support personnel interaction with operating systems and related software applications.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Use operating systems to perform basic system tasks.
2. Understand software and applications in relation to different operating systems.
3. Explain the function of utilities with in different operating systems.
4. Use advanced features of operating systems.
5. Differentiate between types of operating systems.
6. Compare and contrast various features and requirements of Microsoft Operating Systems.
  - A. Install Windows PC operating systems using appropriate methods.
  - B. Operate Windows Control Panel utilities.
7. Identify common features and functionality of the Mac OS and Linux operating systems.

**Course Number and Name:** CST 1613 Security Fundamentals

**Description:** Fundamentals of IT security. Topics include identifying risks and participating in risk mitigation activities; providing infrastructure, application, operational, and information security; applying security controls to maintain confidentiality, integrity, and availability; identifying appropriate technologies and products; troubleshooting security events and incidents; and operating with an awareness of applicable policies, laws, and regulations.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe and define network security.
2. Define and describe malware and social engineering attacks.
  - a. List and define various application and networking-based attacks.
  - b. List and define the steps to secure hosts, applications, and data.
  - c. Define and describe concepts of basic cryptography.
  - d. Define and describe advanced cryptography topics.
3. Demonstrate an understanding of network security fundamentals such as:
  - a. Hardware devices related to network security.
  - b. How network technologies enhance security.
  - c. Basic network design elements.
4. Identify key procedures and concepts related to administering a secure network.
5. List and define key concepts of wireless network security.
6. Define and describe security in relation to enterprise and commercial use of mobile device technologies.
  - a. Define and describe fundamentals of access control.
  - b. Identify and describe proper authentication and account management principles.
7. Define and describe business continuity concepts.
  - a. Identify risk and implement mitigation best practices.
  - b. List and define steps needed perform a proper vulnerability assessment.

**Course Number and Name:** CST 1713 Server Administration I

**Description:** Fundamentals of server support. Topics include support of server hardware, installation and configuration server operating systems, and asset management.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Explain the purpose and function of server form factors.
2. Install, configure and maintain server components.
3. Install cables and implement proper cable management procedures.
4. Configure RAID using best practices.
5. Summarize hardware and features of various storage technologies.
6. Install and deploy primary storage devices based on given specifications and interfaces.
7. Calculate appropriate storage capacity and plan for future growth.
8. Install and configure server operating systems.
9. Compare and contrast server roles and requirements for each.
10. Use access and control methods to administer a server.
11. Compare and contrast various ports and protocols.
12. Configure servers to use IP addressing and network infrastructure services.
13. Explain the importance of asset management and documentation.

**Course Number and Name:** CST 1813 Server Administration II

**Description:** Fundamentals of server support. Topics include support of server hardware, installation and configuration server operating systems, and asset management.

<b>Hour Breakdown:</b>	Semester Credit Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Explain basic network security systems and protocols.
2. Compare and contrast physical security methods and concepts.
3. Apply server hardening techniques.
4. Implement logical access control methods based on company policy.
5. Implement proper environmental controls and techniques.
6. Explain troubleshooting theory and methodologies.
7. Troubleshoot hardware problems, selecting the appropriate tools and methods.
8. Troubleshoot software problems, selecting the appropriate tools and methods.
9. Diagnose network problems, selecting the appropriate tools and methods.
10. Troubleshoot storage problems, selecting the appropriate tools and methods.
11. Diagnose security issues, selecting the appropriate tools and methods.
12. Perform proper server maintenance techniques.
13. Implement data security methods and secure storage disposal techniques.
14. Implement appropriate backup techniques.
15. Explain the importance of disaster recovery principles.
16. Explain the purpose and operation of virtualization components.



**Course Number and Name:** CST 1913 Mobile Device Support I

**Description:** Fundamentals of mobile device support. Topics include an overview of mobile computing history, modern mobile operating systems and related software, types of devices and accessories, common networking protocols, standards-based wireless networking, cellular technology, and wireless network planning design concepts.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Discuss history of mobile computing software and hardware devices.
  - a. Use mobile operating systems to perform basic system tasks.
  - b. Describe unique features of a particular operating system.
  - c. Demonstrate fundamental operations using the operating system.
  - d. Define global terms associated with operating system.
2. Explain the characteristics of various types of mobile devices.
  - a. Compare and contrast accessories & ports of mobile devices.
  - b. Compare and contrast common network ports and protocols for mobile devices.
3. Describe and explain Computer Network Types, Topologies, and the OSI Model
4. Compare and contrast Radio Frequency and Antenna Technology Fundamentals
  - a. Identify and define Cellular Communication Technology.
5. Define and describe Standards and Certifications for Wireless Technology
  - a. Compare and contrast IEEE 802.11 Terminology and Technology
  - b. Discuss and demonstrate the Interpretation of Site Survey, Capacity Planning, and Wireless Design.
6. Define and classify Computer Network Infrastructure Devices
7. Explain and define Network Traffic Flow and Control

**Course Number and Name:** CST 1923 Mobile Device Support II

**Description:** Continuation of Mobile Device Support I. Topics include mobile device management concepts, application deployment, security, data protection best practices and utilizing the troubleshooting methodology to proper diagnose various mobile device technology concerns.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe and explain Mobile Device Management concepts.
  - a. Explain policy required to certify device capabilities.
  - b. Compare and contrast mobility solutions to enterprise requirements.
  - c. Install and configure mobile solutions based on given requirements.
  - d. Implement mobile device on-boarding and off-boarding procedures.
  - e. Implement mobile device operations and management procedures.
  - f. Configure access control on the mobile device using best practices.
2. Configure and deploy mobile applications and associated technologies
3. Identify various encryption methods for securing mobile environments.
4. Execute best practice for mobile device backup, data recovery and data segregation.
5. Explain monitoring and reporting techniques to address security requirements.
6. Explain risks, threats and mitigation strategies affecting the mobile ecosystem.
  - A. Execute appropriate incident response and remediation steps.
7. Implement the troubleshooting methodology to:
  - a. Troubleshoot common device problems.
  - b. Troubleshoot common application problems.
  - c. Troubleshoot common over-the-air connectivity problems.
  - d. Troubleshoot common security problems.

**Course Number and Name:** CST 2113 IT Servicing Lab I

**Description:** Fundamentals of IT servicing. Includes configuration, test equipment and software usage, basic disassembly and assembly methods, preliminary tests and diagnostics, and schematic interpretation. Additional emphasis will be placed on troubleshooting methodology implementation on various hardware and software systems.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Demonstrate and practice general safety procedures in relation to school and work site environments.
2. Identify and utilize hand tools and test equipment needed for basic IT servicing.
3. Identify and use various software tools needed for basic IT servicing equipment.
4. Complete maintenance documentation.
5. Demonstrate repair procedures for disassembly and reassembly of various components.
6. Discuss and perform preventive maintenance using best practices.
7. Troubleshoot common problems related to PC components such as:
  - a. Motherboards
  - b. RAM
  - c. CPU
  - d. Power with appropriate tools.
  - e. Hard drives and RAID arrays
  - f. Common video, projector and display issues.
8. Properly install and support a Microsoft Windows operating system.
9. Recognize and interpret the meaning of common error codes and startup messages from the boot sequence, and identify steps to correct the problems.
10. Given a scenario, apply appropriate Microsoft command line tools.
11. Given a scenario, use appropriate Microsoft operating system features and tools.
12. Given a scenario, use appropriate data destruction and disposal methods.
13. Demonstrate effective behaviors that contribute to the achievement and maintenance of customer satisfaction.
14. Given a scenario, explain the troubleshooting theory.
15. Identify basic troubleshooting procedures and good practices for eliciting problem symptoms from customers.
16. Identify concepts relating to malware, their dangers, their symptoms, their sources, how they infect, how to protect against them, and how to remove or quarantine them.

**Course Number and Name:** CST 2123 IT Servicing Lab II

**Description:** Continuation of IT Servicing Lab I with an increased emphasis on system analysis and diagnosis of PC component and software failures. Additional emphasis will be placed on the diagnosis of hardware and software issues pertaining to mobile devices such as smart phones, tablets, and portable computers, as well as printer and network technology concerns.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Demonstrate and practice general safety procedures in the school and work site environment.
2. Maintain a service log on individual pieces of equipment.
3. Given a scenario, troubleshoot PC operating system problems with appropriate tools.
4. Given a scenario, troubleshoot common PC security issues with appropriate tools and best practices.
5. Install and configure laptop hardware and components.
6. Explain the function of components within the display of a laptop.
7. Given a scenario, use appropriate laptop features.
  - a. Special function keys
  - b. Docking station
  - c. Rotating / removable screens
8. Troubleshoot printers with appropriate tools.
9. Compare modern mobile device specifications to their PC equivalents.
10. Discuss an understanding of the assembly and disassembly process of modern mobile devices compared to the PC equivalents.
11. Given a scenario, troubleshoot and repair common mobile device issues while adhering to the appropriate procedures.
12. Execute best practice for data backup, data recovery and data segregation.
13. Identify common mobile device applications and operating systems issues, and utilize basic troubleshooting to resolve most of the issue associated with them.
14. Execute best practices with interpretation of networking technologies and related services.
15. Identify common symptoms and problems associated with components and devices and how to troubleshoot and isolate the problems.
16. Discuss potential issues from printing from mobile devices and PC equivalents.

**Course Number and Name:** CST 2134 IT Diagnostics and Troubleshooting

**Description:** Diagnostic techniques and troubleshooting methodologies of operating systems, common hardware problems, and system malfunctions, including peripherals.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
4	2	4	90

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Demonstrate and practice general safety procedures in the school and work-site environments.
  - a. Apply relevant and appropriate safety techniques.
  - b. Demonstrate an understanding of and comply with relevant OSHA safety standards.
2. Identify basic troubleshooting procedures and good practices for eliciting problem symptoms from customers.
  - a. Identify basic troubleshooting procedures.
  - b. Explain accepted practices of eliciting problem symptoms in dealing with customers.
  - c. Identify whether the problem is in the hardware or software.
3. Recognize common hardware and software problems, and determine how to resolve them.
  - a. Identify common hardware and software problems.
  - b. Identify the general protection faults.
  - c. Determine the procedures for resolving a system lockup and stop errors ("blue screen of death").
  - d. Identify and utilize third-party and Windows-based utilities to resolve hardware and software problems.
  - e. Identify and resolve problems associated with the Device Manager.
4. Identify common symptoms and problems associated with each component and device and how to troubleshoot and isolate the problems.
  - a. Interpret POST codes.
  - b. Identify and isolate processor/memory symptoms.
  - b. Identify and troubleshoot problems with the monitor/video.
  - c. Identify common problems associated with motherboards.
  - d. Identify and isolate problems associated with hard drives.
  - e. Identify and isolate problems with expansion cards.
5. Recognize and interpret the meaning of common error codes and startup messages from the boot sequence, and identify steps to correct the problems.
  - a. Identify the Safe Mode.
  - b. Identify what a "No operating system found" message means and steps to correct the problem.
  - c. Identify and correct bad, corrupted or missing system files.
6. Recognize Windows-specific printing problems, and identify the procedures for correcting them.
  - a. Demonstrate how to set up and install a local and networked printer.
  - b. Identify and correct when the print spool is stalled.
  - c. Identify and correct when the incorrect/incompatible driver for print problems occur.
7. Identify concepts relating to malware, their dangers, their symptoms, their sources, how they infect, how to protect against them, and how to remove or quarantine them.

- a. Explain preventative measures and techniques.
- b. Examine the propagation of malware.
- c. Identify where various malware files or programs are located within the operating system or other sources.
- d. Identify the various sources for malware.
- e. Identify the procedures of how to determine the presence of various malware.

**Course Number and Name:** CST 2223 Networking II

**Description:** Continuation of Networking I. Topics include further analysis of WAN technologies, in-depth TCP/IP terminology, virtual private and remote access concepts, overview of network security, integrity, and management concepts are also introduced.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Categorize WAN technology types and properties
2. Compare and contrast different wireless standards
3. Obtain an in-depth understanding of TCP/IP Networking
4. Properly identify virtual network and remote access concepts.
5. Understand the concepts of network security
6. Understand the concepts of voice and video over Internet Protocol
7. Properly troubleshoot a variety of network related problems
8. Obtain the knowledge necessary to ensure network integrity and availability
9. Explain basic concepts related to network management

**Course Number and Name:** CST 2413 Cloud Computing I

**Description:** Fundamentals of Cloud computing. Topics include an understanding of terms and characteristics associated with Cloud technologies, an overview of history, virtualization and scalability, and foundational knowledge of the Cloud computing industry.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Understand basic Cloud characteristics
  - a. Basic terms and characteristics
  - b. Object storage concepts
2. Describe and Define Fundamental Concepts Cloud computing
  - a. History and background
  - b. Virtualization and scalability
  - c. Foundational knowledge of Cloud computing
    1. Infrastructure
    2. Platform
    3. Applications
    4. Enabling Services
3. Describe and define technical basics of Cloud and scalable computing in addition to Cloud infrastructure.
4. Define and implement proper diagnosis and performance monitoring techniques to mitigate common failure points in a distributed system.
5. Define and describe Cloud system delivery and hosting models



**Course Number and Name:** CST 2423 Cloud Computing II

**Description:** Continuation of Cloud Computing I. Emphasis is placed on the installation, configuration, and management of Cloud-based systems.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Install, configure, and manage a Cloud-based system.
2. Identify and describe advanced hardware management concepts.
3. Describe and define concepts related storage provisioning and networking for Cloud infrastructure.
4. Compare and contrast deployment and testing strategies for common Cloud computing models.
5. Describe and define Cloud computing standards and security strategies.
6. Define and describe the appropriate business model found in Cloud computing.
7. Compare and Contrast advantages and disadvantages of utilizing Cloud computing.

**Course Number and Name:** CST 2613 Introduction to Cyber-Crime

**Description:** This course introduces and explains the various types of offenses that qualify as cyber-crime activity. Emphasis is placed on identifying cyber-crime activity and the response to these problems from both the private and public domains. Upon completion, students should be able to accurately describe and define cyber-crime activities and select an appropriate response to deal with the problem.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Define information security and key terms and critical concepts of information security.
2. List and describe the threats posed to information security and common attacks associated with those threats.
3. Describe the relationship between threats and attacks against information within systems.
4. Describe the functions of and relationships among laws, regulations, and professional organizations in information security.
5. Discuss how an organization institutionalizes its policies, standards, and practices using education, training, and awareness programs.
6. Define risk management, risk identification, and risk control

**Course Number and Name:** CST 2623 Introduction to Computer Forensics

**Description:** This introductory course focuses on computer forensics principles and an exposure to computer technology concepts from operating systems and file types to data transmission and PDA's. Students are introduced to the foundation of electronic evidence collection and handling; as well as the role of evidence in detecting and prosecuting computer crimes, incident response, civil cases, fraud and information security verification. Demonstrations and hands-on investigations familiarize students with a number of relevant investigative techniques

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Formulate and implement organizational computer forensics preparedness policies, as well as determine the necessity for forensic procedures.
2. Identify when to instigate an investigation and involve law enforcement.
3. Classify various forms of computer crime/abuse and the relevant evidence.
4. Explain laws relevant to computer forensics.
5. Retrieve and seize digital evidence from computer systems without contamination.
6. Explain how data can be hidden.
7. Apply and justify the use of particular forensics tools.

**Course Number and Name:** CST 291(1–3) Special Projects

**Description:** Practical application of skills and knowledge gained in computer servicing and technical-related courses. The instructor works closely with the student to ensure that the selection of a project will enhance the student's learning experience.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
1		2	30
2		4	60
3		6	90

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Improve career prospects in the digital-age workplace utilizing effective communication skills.
2. Properly satisfy customer needs while adhering to workplace policy and procedures.
3. Discuss job roles, responsibilities, and showcase character traits required of successful IT Technicians in the workplace.
4. Obtain and utilize professionalism skills (business etiquette, ethics, teamwork, etc.) while in the workplace.
5. Prepare a professional resume and use online job resources to aid in searching for and obtaining a desired employment opportunity.
6. Utilize proper soft-skills to perform well in employment interviews and use proper methods of follow-up to assist in securing a desired occupation.
7. Use technical skills obtained through academic career to perform real world scenarios in relation to IT Technician servicing to further prepare for the world of work

**Course Number and Name:** CST 292(1–6) Supervised Work Experience

**Description:** Cooperative program between industry and education designed to integrate the student's technical studies with industrial experience.

**Hour Breakdown:**

Semester Credit Hours	Lecture	Lab	Contact Hours
1		2	30
2		4	60
3		6	90
4		8	120
5		10	150
6		12	180

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Apply technical skills needed to be a viable member of the workforce.
  - a. Prepare a description of technical skills to be developed in the supervised work experience program.
  - b. Develop technical skills needed to be a viable member of the workforce.
2. Apply skills developed in other program area courses.
  - a. Perform skills developed in other program area courses in the supervised work experience program.
3. Apply human relationship skills.
  - a. Practice human relationship skills in the supervised work experience program.
4. Apply and practice positive work habits and responsibilities.
  - a. Perform assignments to develop positive work habits and responsibilities.
5. Work with the instructor and employer to develop written occupational objectives to be accomplished.
  - a. Perform written occupational objectives in the supervised occupational experience program.
6. Assess accomplishment of objectives.
  - a. Prepare daily written assessment of accomplishment of objectives.
  - b. Present weekly written reports of activities performed and objectives accomplished to the instructor.
7. Utilize a set of written guidelines for the supervised work experience.
  - a. Develop and follow a set of written guidelines for the supervised work experience.
  - b. Write and present/report project updates utilizing common formatting guidelines (i.e., APA, MLA, etc).



## RECOMMENDED TOOLS AND EQUIPMENT

### CAPITALIZED ITEMS

1. Blade servers for Operating Systems, Server Administration I and II, Cloud Computing I and II, and Security Fundamentals.
  - a. Network operating system
  - b. Servers
  - c. Switches/Routers
  - d. Color printer
2. Fault insertion troubleshooting computer w/ monitor, printer, and complete documentation including diagnostic software, schematics, and manufacturer's specifications (1 to 3 students)
3. Analog fault insertion troubleshooting trainer and complete documentation including schematics and manufacturer's specifications (1)
4. Laser printer trainers (1 to 3 students)
5. Apple/Mac trainers (1 to 3 students)
6. Lab for Operating Systems, Networking I, and other related technical electives.
  - a. Mobile devices
  - b. Laser printer (1 per class with Jet Direct connection)
  - c. Color printer (1 per class)
  - d. Cabling and connecting equipment for each network
  - e. Internet capability
  - f. Switch (48 and 96 port), router, rack, and panels (wired and/or wireless)
7. Lab for maintenance, tear down, and reassembly
  - a. Mobile devices
  - b. Multimedia computers with CD-ROM, speakers, sound card. Option to purchase internal modem per need to local lab (30 units per class, 10 to be used as servers)
  - c. Laser printer (1 per class with Jet Direct connection)
  - d. Color printer (1 per class)
  - e. Scanner, color page (1 per class)
  - f. Cabling and connecting equipment for each network
  - g. Internet capability
  - h. Switch (48 port and 96 port), router, rack, and panels (wired and/or wireless)
  - i. 48 port hubs
8. Mobile Trainers
  - a. Wireless access points
  - b. Security cameras and other devices
  - c. Operating systems and applications
9. Computer crime and computer forensics trainers
  - a. Monitoring software
  - b. Database software
  - c. Bio-metric specialized equipment

### NON-CAPITALIZED ITEMS

1. Digital multi-meter (1 per student)
2. Fiber switches 48 ports or higher
3. Single mode fiber optic cable
4. Multi-mode fiber optic cable
5. Patch panel
6. Racks, rack mounts
7. Network interface cards (wired and/or wireless) (1 per student)
8. Multi-handset cordless phone system
9. Media devices
10. Logic clip sets, including 14, 16, 18, 24, and 40 pin (1)
11. Integrated circuit puller and inserter (1)
12. Nut driver set (1 per 3 students)

13. Allen wrenches (English and metric) (1 set each)
14. Solder station including iron, holder, and solder sucker (1 per 2 students)
15. Student tool kit:
  - A. Screwdriver set
  - B. Current probe
  - C. IC puller
  - D. 3/16-in., 1/4-in. nut driver
  - E. Three-claw part holder
  - F. T10, T15 rev. torque driver
  - G. 1/8-in., 3/16-in., 1/4-in. flat screwdriver
  - H. #2, #4 reversible screwdriver
  - I. IC inserter, IC extractor
  - J. #0, #1 Phillips screwdriver
  - K. Solder reel, soldering iron
  - L. 4 1/2-in. side cutter
  - M. 6-in. adjustable wrench
  - N. 5-in. needle-nose pliers
  - O. 8-in. wire cutter
  - P. Reverse action tweezers
  - Q. Spare parts tube
  - R. Logic probe
  - S. Wire side cutter
  - T. Needle-nose pliers
  - U. Adjustable wrench (6-in.)
  - V. Network tool kits (4)
16. Network testing, monitoring and measurement equipment
17. Safety goggles (1)
18. Wrist strap and static mat (1 per student)
19. Lab work benches (1 per 4 students)
20. Lab work stool (1 per student)
21. High-intensity lamp w/magnifying lens (1 per student)
22. Circuit board vise (1 per work bench)

## RECOMMENDED INSTRUCTIONAL AIDS

It is recommended that instructors have access to the following items:

1. Color data/video projector (1 per lab)
2. Interactive board (e.g., SmartBoard, Promethean, Mimio, etc.)
3. SVGA to NTSC video output scan connector (1 per television)
4. System maintenance/repair tool kit (2 per lab)
5. Multimedia capable lap top (1 per department)
6. 75", or larger, TV screens (7)
7. DVD player
8. Mobile devices (1 per instructor)
9. Cyber-crime/cyber terrorism handbooks (2)



## SUGGESTED RESOURCES

1. Network operating system software – client licenses for Microsoft Windows Server,
2. Linux (no license required)
3. Network-compatible backup software
4. Imaging software (i.e., Symantec Ghost, etc.)
5. Virtual system software (i.e., Virtual PC, VMWare Player, Virtual Box, etc.)
6. Virus Protection software (i.e., Security Essentials, Norton, etc.)
7. Malware protection software (i.e., Super Anti-Spyware, UBCD4Win, Ad-Aware, etc.)
8. Network-compatible word processing software (1 per lab)
9. Network-compatible database management software (1 per lab)
10. Network-compatible spreadsheet software (1 per lab)
11. Network-compatible presentation software (1 per lab)
12. Network-compatible operating system software – MSDNAA is preferred source [More than one operating system will be required for Operating Systems (CST 1333).] (1 per lab)
13. Microcomputer programming languages software (1 per lab)
14. Additional clip art software (1 per lab)
15. Apple iOS software
16. Mac OS X or latest software
17. VMware software
18. Mobile devices (tablet, phone, iPad, iPod)

## STUDENT SUPPLIES

1. Cables
2. Connectors
3. Network interface cards
4. Latex gloves (1 box per student)
5. Wrist band and anti-static mat
6. Soldering kit
7. Student tool kit:
  - A. Screwdriver set
  - B. Current probe
  - C. IC puller
  - D. 3/16-in., 1/4-in. nut driver
  - E. Three-claw part holder
  - F. T10, T15 rev. torque driver
  - G. 1/8-in., 3/16-in., 1/4-in. flat screwdriver
  - H. #2, #4 reversible screwdriver
  - I. IC inserter, IC extractor
  - J. #0, #1 Phillips screwdriver
  - K. Solder reel, Soldering iron
  - L. 4 1/2-in. side cutter
  - M. 6-in. adjustable wrench
  - N. 5-in. needle-nose pliers
  - O. 8-in. wire cutter
  - P. Reverse-action tweezers
  - Q. Spare parts tube
  - R. Logic probe
  - S. Wire side cutter
  - T. Needle-nose pliers
  - U. Adjustable wrench (6-in.)
  - V. Precision tool kits
  - W. Pry and removal tools
  - X. Apple iPhone, iPad, iPod, and tablet tool kits
  - Y. Power testers

## CURRICULUM DEFINITIONS AND TERMS

- Course Name – A common name that will be used by all community colleges in reporting students
- Course Abbreviation – A common abbreviation that will be used by all community and junior colleges in reporting students
- Classification – Courses may be classified as the following:
  - Career Certificate Required Course – A required course for all students completing a career certificate.
  - Technical Certificate Required Course – A required course for all students completing a technical certificate.
  - Technical Elective – Elective courses that are available for colleges to offer to students.
- Description – A short narrative that includes the major purpose(s) of the course
- Prerequisites – A listing of any courses that must be taken prior to or on enrollment in the course
- Corequisites – A listing of courses that may be taken while enrolled in the course
- Student Learning Outcomes – A listing of the student outcomes (major concepts and performances) that will enable students to demonstrate mastery of these competencies

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75% of the time allocated to each course. The remaining 25% of each course should be developed at the local district level and may reflect the following:
  - Additional competencies and objectives within the course related to topics not found in the state framework, including activities related to specific needs of industries in the community college district
  - Activities that develop a higher level of mastery on the existing competencies and suggested objectives
  - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed or revised
  - Activities that include integration of academic and career–technical skills and course work, school-to-work transition activities, and articulation of secondary and postsecondary career–technical programs
  - Individualized learning activities, including work-site learning activities, to better prepare individuals in the courses for their chosen occupational areas
- Sequencing of the course within a program is left to the discretion of the local college. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors. Programs that offer an Associate of Applied Science Degree must include all of the required Career Certificate courses, Technical Certificate courses AND a minimum of 15 semester hours of General Education Core Courses. The courses in the General Education Core may be spaced out over the entire length of the program so that students complete some academic and Career Technical courses each semester. Each community college specifies the actual courses that are required to meet the General Education Core Requirements for the Associate of Applied Science Degree at their college.
- In order to provide flexibility within the districts, individual courses within a framework may be customized by doing the following:
  - Adding new student learning outcomes to complement the existing competencies and suggested objectives in the program framework
  - Revising or extending the student learning outcomes
  - Adjusting the semester credit hours of a course to be up 1 hour or down 1 hour (after informing the Mississippi Community College Board [MCCB] of the change)

## Course Crosswalk Computer Servicing Technology

*Note: Courses that have been added or changed in the 2015 curriculum are highlighted.*

Existing			Revised		
2010 Curriculum			2015 Curriculum		
Course Number	Course Title	Hours	Course Number	Course Title	Hours
CST 1114	Basic Electronics	4	CST 1114	Basic Electronics	4
CST 1123	Basic Computer Hardware	3	CST 1123	Basic IT Hardware	3
CST 1214	Networking I	4	CST 1214	Networking I	4
			CST 1323	Digital Electronics	4
CST 1333	Operating Systems	3	CST 1333	Operating Systems	3
CST 2113	Computer Servicing Lab I	3	CST 2113	IT Servicing Lab I	3
CST 2123	Computer Servicing Lab II	3	CST 2123	IT Servicing Lab II	3
CST 2134	PC Diagnostics and Troubleshooting	4	CST 2134	IT Diagnostics and Troubleshooting	4
CST 2223	Networking II	3	CST 2223	Networking II	3
			CST 1154	Web and Programming Concepts	4
			CST 1713	Server Administration I	3
			CST 1613	Security Fundamentals	3
			CST 1813	Server Administration II	3
			CST 1913	Mobile Device Support I	3
			CST 1923	Mobile Device Support II	3
			CST 2413	Cloud Computing I	3
			CST 2423	Cloud Computing II	3
			CST 2613	Computer Security Threats	3
			CST 2463	Computer Forensics	3
			CST 2913	Special Projects	3