Implementation date
Fall 2009

PROGRAM CONCENTRATION: **Business & Computer Science**
CAREER PATHWAY(S): **Computer Networking**
Computer Systems and Support
COURSE TITLE: **Information Technology Support**

Course Description: In this course, students learn the functionality of hardware components as well as best practices in maintenance and safety issues. Through hands-on activities and labs, students learn how to assemble and configure a computer and troubleshoot computer hardware problems. This course provides students with in-depth technical discussions of Information Technology objectives augmented through hands-on exercises. Emphasis is placed on communication skills and the professionalism needed to become a successful Computer Support Technician.

PERSONAL COMPUTER COMPONENTS

Students will identify the fundamental principles of using personal computers and the installation, configuration, optimization, and upgrade of personal computer components. Students will also identify the tools, diagnostic procedures, and troubleshooting techniques for repairing personal computer components, as well as performing preventive maintenance.

BCS-ITS-1. Students will install, configure, optimize and upgrade personal computer components.

a. Add, remove, and configure personal computer components including selection and installation of appropriate components.

BCS-ITS-2. Students will identify tools, diagnostic procedures and troubleshooting techniques for personal computer components.

a. Identify and apply basic diagnostic procedures and troubleshooting techniques.
b. Recognize and isolate issues with peripherals, multimedia, specialty input devices, internal and external storage, and CPUs.
c. Identify the steps used to troubleshoot components (e.g. check proper seating, installation, appropriate components, settings, and current driver).
d. Recognize names, purposes, characteristics, and appropriate application of tools.

BCS-ITS-3. Students will perform preventive maintenance on personal computer components.

a. Identify and apply common preventive maintenance techniques for personal computer components.

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Academic Standards:
ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

ELA10RC3 The student acquires new vocabulary in each content area and uses it correctly.

ELA10RC4 The student establishes a context for information acquired by reading across subject areas.

ELA10LSV1The student participates in student-to-teacher, student-to-student, and group verbal interactions.

SCSh3 Students will identify and investigate problems scientifically.

LAPTOPS AND PORTABLE DEVICES
Students will identify fundamental principles of using laptops and portable devices. Students will be able to install, configure, optimize, and upgrade laptops and portable devices. Students will demonstrate tool identification, diagnostic procedures, and troubleshooting techniques for laptops and portable devices, as well as perform preventive maintenance on laptops and portable devices.

BCS-ITS-4. Students will identify fundamental principles of using laptops and portable devices.

a. Identify appropriate applications for laptop-specific communication connections such as Bluetooth, infrared, cellular WAN, and Ethernet.
b. Identify appropriate laptop-specific power and electrical input devices and determine how amperage and voltage can affect performance.
c. Identify the major components of the LCD including inverter, screen, and video card.

BCS-ITS-5. Students will install, configure, optimize, and upgrade laptops and portable devices.

a. Remove laptop-specific hardware such as peripherals, hot-swappable, and non-hot swappable devices.
b. Describe how video sharing affects memory upgrades.

BCS-ITS-6. Students will use tools, diagnostic procedures, and troubleshooting techniques for laptops and portable devices.

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a. Use procedures and techniques to diagnose power conditions, video, keyboard, pointer, and wireless card issues.

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ELA10RC3 The student acquires new vocabulary in each content area and uses it correctly.

ELA10RC4 The student establishes a context for information acquired by reading across subject areas.

ELA10LSV1The student participates in student-to-teacher, student-to-student, and group verbal interactions.

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OPERATING SYSTEMS
Students will be able to identify the fundamental principles of operating systems. Students will be able to demonstrate installation, configuration, optimization, and upgrades of operating systems. Students will demonstrate tool identification, diagnostic procedures, and troubleshooting techniques for laptops and portable devices, as well as perform preventive maintenance on laptops and portable devices.

BCS-ITS-7. Students will identify the fundamental principles of operating systems.

a. Use command-line functions and utilities to manage operating systems, including proper syntax.
b. Identify concepts and procedures for creating, viewing, and managing disks, directories, and files on operating systems.

BCS-ITS-8. Students will install, configure, optimize, and upgrade operating systems.

a. Identify procedures and utilities used to optimize operating systems.

BCS-ITS-9. Students will identify tools, diagnostic procedures, and troubleshooting techniques for operating systems.

a. Demonstrate the ability to recover operating systems (e.g. boot methods, recovery console, ASR, ERD).
b. Recognize and resolve common operational problems.

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c. Recognize and resolve common error messages and codes.
d. Use diagnostic utilities and tools to resolve operational problems.

BCS-ITS-10. Students will perform preventive maintenance for operating systems.

a. Demonstrate the ability to perform preventive maintenance on operating systems including software and Windows updates (e.g. service packs), scheduled backups/restore, and restore points.

Academic Standards:
ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

ELA10RC3 The student acquires new vocabulary in each content area and uses it correctly.

ELA10RC4 The student establishes a context for information acquired by reading across subject areas.

ELA10LSV1The student participates in student-to-teacher, student-to-student, and group verbal interactions.

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PRINTERS AND SCANNERS
Students will be able to identify the fundamental principles of printers and scanners. Students will be able to demonstrate installation, configuration, optimization, and upgrades of printers and scanners. Students will demonstrate tool identification, diagnostic procedures, and troubleshooting techniques for printers and scanners, as well as perform preventive maintenance on printers and scanners.

BCS-ITS-11. Students will identify the fundamental principles of using printers and scanners.

a. Describe processes used by printers and scanners including laser, ink dispersion, thermal, solid ink, and impact printers and scanners.

BCS-ITS-12. Students will install, configure, optimize, and upgrade printers and scanners.

a. Install and configure printers/scanners.
b. Install and configure printer upgrades including memory and firmware.
c. Optimize scanner performance including resolution, file format, and default settings.

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BCS-ITS-13. Students will identify tools and diagnostic procedures to troubleshoot printers and scanners.

a. Gather information about printer/scanner problems.
b. Review and analyze collected data.
c. Isolate and resolve identified printer/scanner problems including defining the cause, applying the fix, and verifying functionality.
d. Identify appropriate tools used for troubleshooting and repairing printer/scanner problems.

BCS-ITS-14. Students will perform preventive maintenance of printers and scanners.

a. Perform scheduled maintenance according to vendor guidelines (e.g. install maintenance kits, reset page counts).
b. Ensure a suitable environment.
c. Use recommended supplies.

Academic Standards:
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ELA10RC3 The student acquires new vocabulary in each content area and uses it correctly.

ELA10RC4 The student establishes a context for information acquired by reading across subject areas.

ELA10LSV1The student participates in student-to-teacher, student-to-student, and group verbal interactions.

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NETWORKS
Students will be able to identify the fundamental principles of networking. Students will be able to demonstrate installation, configuration, optimization, and upgrades of networking. Students will demonstrate tool identification, diagnostic procedures, and troubleshooting techniques for networking, as well as perform preventive maintenance on networks.

BCS-ITS-15. Students will identify the fundamental principles of networks.

a. Identify names, purposes, and characteristics of basic network protocols and terminologies.

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b. Identify names, purposes, and characteristics of technologies for establishing connectivity.

BCS-ITS-16. Students will install, configure, optimize, and upgrade networks.

a. Install and configure browsers.
b. Establish network connectivity.
c. Demonstrate the ability to share network resources.

BCS-ITS-17. Students will use tools, diagnostic procedures, and troubleshooting techniques for networks.

a. Identify names, purposes, and characteristics of tools.
b. Diagnose and troubleshoot basic network issues.
c. Perform preventive maintenance of networks including securing and protecting network cabling.

Academic Standards:
ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

ELA10RC3 The student acquires new vocabulary in each content area and uses it correctly.

ELA10RC4 The student establishes a context for information acquired by reading across subject areas.

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SECURITY
Students will be able to identify the fundamental principles of data security. Students will be able to demonstrate installation, configuration, optimization, and upgrades of security measures. Students will demonstrate tool identification, diagnostic procedures, and troubleshooting techniques for data security, as well as perform preventive maintenance for computer security.

BCS-ITS-18. Students will identify the fundamentals and principles of security.

a. Identify the purposes and characteristics of access control.
b. Identify the purposes and characteristics of auditing and event logging.

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BCS-ITS-19. Students will install, configure, upgrade, and optimize security.

a. Install and configure software, wireless, and data security.

BCS-ITS-20. Students will identify tools, diagnostic procedures and troubleshooting techniques for security.

a. Diagnose and troubleshoot software and data security issues.

BCS-ITS-21. Students will perform preventive maintenance for computer security.

a. Recognize social engineering and address social engineering situations.

Academic Standards:
ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

ELA10RC3 The student acquires new vocabulary in each content area and uses it correctly.

ELA10RC4 The student establishes a context for information acquired by reading across subject areas.

ELA10LSV1The student participates in student-to-teacher, student-to-student, and group verbal interactions.

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SAFETY AND ENVIRONMENTAL
Students will describe the aspects and importance of safety and environmental issues. Students will also identify potential hazards in the workplace and implement proper safety procedures including ESD precautions and procedures, safe work environments, and equipment handling.

BCS-ITS-22. Students will identify potential hazards and implement proper safety precautions and procedures, safe work environment, and equipment handling.

a. Identify potential hazards and proper safety procedures including power supply, display devices, and environment (e.g. trip, liquid, situational, atmospheric hazards and high voltage and moving equipment).

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ELA10RL5 The student understands and acquires new vocabulary and uses it correctly in reading and writing.

ELA10RC3 The student acquires new vocabulary in each content area and uses it correctly.

ELA10RC4 The student establishes a context for information acquired by reading across subject areas.

ELA10LSV1The student participates in student-to-teacher, student-to-student, and group verbal interactions.

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COMMUNICATION AND PROFESSIONALISM

Students will use good communications skills when communicating with customers and colleagues and will demonstrate listening skills, tact, and discretion as well as professional ethics in regards to privacy, confidentiality, and respect for customers and their property.

BCS-ITS-23. Students will use good communication skills, including listening and tact/ discretion, when communicating with customers and colleagues.

a. Use clear, concise, and direct statements.
b. Allow the customer to complete statements – avoid interrupting.
c. Clarify customer statements – ask pertinent questions.
d. Avoid using jargon, abbreviations, and acronyms.
e. Listen to customers.

BCS-ITS-24. Students will use job-related professional behavior including notation of privacy, confidentiality, and respect for the customer and customers' property.

a. Demonstrate proper behavior when dealing with clients.
b. Demonstrate proper behavior when handling client property.

Academic Standards:

ELA10W1 The student produces writing that establishes an appropriate organizational structure, sets a context and engages the reader, maintains a coherent focus throughout, and signals closure.

ELA10W3 The student uses research and technology to support writing.

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ELA10RL4 The student employs a variety of writing genres to demonstrate a comprehensive grasp of significant ideas in sophisticated literary works. The student composes essays, narratives, poems, or technical documents.

Reading Across the Curriculum

Reading Standard Comment
After the elementary years, students engage in reading for learning. This process sweeps across all disciplinary domains, extending even to the area of personal learning. Students encounter a variety of informational as well as fictional texts, and they experience text in all genres and modes of discourse. In the study of various disciplines of learning (language arts, mathematics, science, social studies), students must learn through reading the communities of discourse of each of those disciplines. Each subject has its own specific vocabulary, and for students to excel in all subjects, they must learn the specific vocabulary of those subject areas in *context*.

Beginning with the middle grades years, students begin to self-select reading materials based on personal interests established through classroom learning. Students become curious about science, mathematics, history, and literature as they form contexts for those subjects related to their personal and classroom experiences. As students explore academic areas through reading, they develop favorite subjects and become confident in their verbal discourse about those subjects.

Reading across curriculum content develops both academic and personal interests in students. As students read, they develop both content and contextual vocabulary. They also build good habits for reading, researching, and learning. The Reading Across the Curriculum standard focuses on the academic and personal skills students acquire as they read in all areas of learning.

CTAE-RC-1 Students will enhance reading in all curriculum areas by:
Reading in All Curriculum Areas
-Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
-Read both informational and fictional texts in a variety of genres and modes of discourse.
-Read technical texts related to various subject areas.
Discussing Books
-Discuss messages and themes from books in all subject areas.
-Respond to a variety of texts in multiple modes of discourse.
-Relate messages and themes from one subject area to messages and themes in another area.
-Evaluate the merit of texts in every subject discipline.

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-Examine author's purpose in writing.
-Recognize the features of disciplinary texts.

Building Vocabulary Knowledge

-Demonstrate an understanding of contextual vocabulary in various subjects.
-Use content vocabulary in writing and speaking.
-Explore understanding of new words found in subject area texts.

Establishing Context

-Explore life experiences related to subject area content.
-Discuss in both writing and speaking how certain words are subject area related.
-Determine strategies for finding content and contextual meaning for unknown words.

CTAE Foundation Skills

The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state's academic performance standards.

The CTAE Foundation Skills are aligned to the foundation of the U. S. Department of Education's 16 Career Clusters. Endorsed by the National Career Technical Education Foundation (NCTEF) and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), the foundation skills were developed from an analysis of all pathways in the sixteen occupational areas. These standards were identified and validated by a national advisory group of employers, secondary and post secondary educators, labor associations, and other stakeholders. The Knowledge and Skills provide learners a broad foundation for managing lifelong learning and career transitions in a rapidly changing economy.

CTAE-FS-1 Technical Skills: Learners achieve technical content skills necessary to pursue the full range of careers for all pathways in the program concentration

CTAE-FS-2 Academic Foundations: Learners achieve state academic standards at or above grade level.

CTAE-FS-3 Communications: Learners use various communication skills in expressing and interpreting information

CTAE-FS-4 Problem Solving and Critical Thinking: Learners define and solve problems, and use problem-solving and improvement methods and tools.

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CTAE-FS-5 Information Technology Applications: Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.

CTAE-FS-6 Systems: Learners understand a variety of organizational structures and functions.

CTAE-FS-7 Safety, Health and Environment: Learners employ safety, health and environmental management systems in corporations and comprehend their importance to organizational performance and regulatory compliance.

CTAE-FS-8 Leadership and Teamwork: Learners apply leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

CTAE-FS-9 Ethics and Legal Responsibilities: Learners commit to work ethics, behavior, and legal responsibilities in the workplace.

CTAE-FS-10 Career Development: Learners plan and manage academic-career plans and employment relations.

CTAE-FS-11 Entrepreneurship: Learners demonstrate understanding of concepts, processes, and behaviors associated with successful entrepreneurial performance.