

July 2007

Florida Department of Education
CURRICULUM FRAMEWORK

Program Title: Computer Information Technology
Occupational Area: Business
Program Classification: PSV
Program Type: AS* or AAS**
CIP Number: 1507.030600 (AS)/ 0507.030600 (AAS)
Length: 63 College Credits
SOC Code: 11-3021

I. MAJOR CONCEPTS/CONTENT: The purpose of this program is to prepare students for employment as a PC Support Technician, help desk technician, user support analyst, applications system analyst, information systems specialist, technical support analyst, computer information manager user support supervisor, computer systems analyst, customer service representative, computer operator, computer repair technicians, computer sales person, help desk office supervisor, office systems support specialist, software tester, software trainer, user support specialist or to provide supplemental training for persons previously or currently employed in these occupations.

The content prepares individuals to analyze microcomputer oriented operating procedures, software applications packages, and hardware in order to devise efficient methods to manage a microcomputer-based work environment; develop new systems to meet projected needs; select and install information technology equipment, troubleshoot information technology equipment, manage and support information technology users.

II. LABORATORY ACTIVITIES: Laboratory activities are an integral part of this program and include the use of various software packages, microcomputers, related tools for repairing computer equipment, help desk support hardware and software; peripheral equipment; and information technology analysis equipment.

III. COMPLEMENTARY SOFTWARE AND EQUIPMENT: The following tools and equipment are required for this program: PCs, peripheral devices, basic telephony hardware, telephone systems, productivity software, diagnostic software, browser software, tool kits specific to hardware.

IV. INSTRUCTOR QUALIFICATIONS:

Preferred:

Masters Degree in Field or Masters Degree and 18 hours in Management Information Science, Information Studies, Information Systems, or Computer Programming. Experience working in related fields such as help desk supervisor, technical support supervisor, customer service supervisor or related area. Industry Certification in appropriate area.

Minimum:

Associate Degree in field. Two or more years of related work experience.

Industry Certification in appropriate area.

- V. WORK/LEARN CYCLES: The cooperative method of instruction, such as internship or apprenticeship, is appropriate for this program. Whenever the cooperative method is offered, the following is required for each student: a training plan (signed by the student, teacher and employer) which includes instructional objectives and a list of on-the-job and in-school learning experiences; a work station which reflects equipment, skills and tasks which are relevant to the occupation which the student has chosen as a career goal. **It is recommended that the student receive monetary compensation, as well as credit, for work performed.**

- VI. DISTANCE LEARNING PRODUCTS: Partial or complete programs can be offered successfully for those students for whom time, geographical distance or work schedules might constitute restricting factors. This is accomplished through the use of distance learning materials for concept/theory mastery and /or skills labs that allow the student to complete the skills objectives of the curriculum across a variety of schedules.

Many products exist for the conceptual and theoretical portions of most courses. Each offers a variety of courses that utilize both synchronous and asynchronous tools to allow interaction with instructors, fellow students and practicing professional. Other features include:

- .Industry Standard curriculum that can lead to certification.
- .Pre-assessment components.
- .Assessment tools.
- Multimedia environments.

- VII. SPECIAL NOTE: Industry certifications have become an important measure of success in the information technology fields. Whenever possible, current industry certifications should be addressed within the program.

The traits and attitudes necessary for success within this program include: organization, patience, resourcefulness, willingness and ability to learn, ability to work in a team, sense of humor, ability to multi-task, service-orientation, persistence, professional work ethic, listening ability.

Future Business Leaders of America (Secondary), Phi Beta Lambda (Postsecondary), and Business Professionals of America (BPA) are the appropriate Career Student Organizations (CSO) for providing leadership training and for reinforcing specific career and technical skills. Career Student Organizations, when provided, shall be an integral part of the career and technical instructional program, and the activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.065, FAC.

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Adult students with disabilities must self-identify and request such services. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

The typical length of this program for the average achieving student is an associate degree.

VIII. INTENDED OUTCOMES: After successfully completing this program, the student will be able to:

- 01.0 Understand, install and configure computer hardware.
- 02.0 Understand, Install and configure computer software
- 03.0 Demonstrate understanding of networked environments
- 04.0 Demonstrate understanding of internet structure, organization and navigation.
- 05.0 Perform technical system support functions.
- 06.0 Perform troubleshooting activities.
- 07.0 Perform systems monitoring activities.
- 08.0 Perform customer service skills.
- 09.0 Perform user-training activities.
- 10.0 Perform computer information systems analysis activities.
- 11.0 Demonstrate professional development skills.
- 12.0 Demonstrate employability skills.
- 13.0 Demonstrate general organization computing workplace competencies.

* AS Degree: This degree requires the inclusion of a minimum of 15 credits of general education coursework according to SACS, and it must be transferable according to 6A-14.030 (2), FAC.

** AAS Degree: This degree requires the inclusion of a minimum of 15 credits of general education coursework according to SACS.

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CURRICULUM FRAMEWORK
STUDENT PERFORMANCE STANDARDS

Program Title: Computer Information Technology

- 01.0 Understand, install and configure computer hardware. The student will be able to:
- 01.01 Explain the use of binary numbers to represent instructions and data.
 - 01.02 Describe the hardware implications of the use of binary representation of instructions and data.
 - 01.03 Convert numbers among decimal, binary, and hexadecimal representation.
 - 01.04 Perform binary arithmetic.
 - 01.05 Identify various coding schemes (ASCII, etc.).
 - 01.06 Discuss various data types (signed and unsigned integers, floating point, etc).
 - 01.07 Identify the major hardware platforms.
 - 01.08 Describe distinguishing features of the major hardware platforms.
 - 01.09 Set up and use multiple hardware platforms built on various processor architectures.
 - 01.10 Describe the functions of major hardware components of a computer system.
 - 01.11 Recognize and correctly identify computing hardware components.
 - 01.12 Set up and configure systems and peripherals.
 - 01.13 Set up and upgrade BIOS.
 - 01.14 Install and configure storage and I/O device interfaces.
 - 01.15 Install and configure multimedia devices and interfaces.
 - 01.16 Describe emerging hardware technologies and discuss their potential impact.
 - 01.17 Implement proper procedures for handling and safeguarding equipment.
 - 01.18 Perform preventive maintenance tasks on microcomputer systems.
 - 01.19 Describe procedures for proper disposal of computer components.
 - 01.20 Review installation specifications
 - 01.21 Unpack all components, file and disseminate all inventory and warrant information.
 - 01.22 Assure all components are present and functional
 - 01.23 Install and configure network hardware components.
 - 01.24 Perform component and system level upgrades.
 - 01.25 Disassemble and re-assemble a microcomputer system completely.
 - 01.26 Describe principles of computer organization as they apply to typical microcomputer equipment.
 - 01.27 Draw a schematic of a typical microcomputer system.
 - 01.28 Describe the architecture of a typical microcomputer system.
 - 01.29 Discuss issues that affect system design and construction (redundancy, fault tolerance, etc.)

02.0 Understand, Install and configure computer software. The student will be able to:

- 02.01 Describe the functions and major components (BIOS, task management, etc.) of a computer operating system.
- 02.02 Identify current operating systems and describe their vital features.
- 02.03 Use an operating system for activities such as data and file management.
- 02.04 Identify current systems utilities and describe their functions.
- 02.05 Use system software to perform routine maintenance tasks such as backup, hard drive defragmentation, etc.
- 02.06 Use operating systems of different brands and platforms.
- 02.07 Use both stand-alone operating systems and network operating systems.
- 02.08 Create, use, and maintain system configuration files.
- 02.09 Make configuration changes to an operating system to optimize performance.
- 02.10 Transmit and exchange data files in a multiple platform hardware environment.
- 02.11 Describe the primary features and functions of the major categories of applications software (word processing, database, spreadsheet, presentation, email, browsers, etc.).
- 02.12 Use basic features of office productivity software.
- 02.13 Learn independently to perform (previously untaught) tasks using office productivity software.
- 02.14 Use software produced by multiple vendors.
- 02.15 Transmit and exchange data in a multiple vendor software environment.
- 02.16 Use integration features of different office productivity applications software.
- 02.17 Use office productivity or other applications.
- 02.18 Install and configure a microcomputer operating system.
- 02.19 Describe procedures for uninstalling operating system software.
- 02.20 Install and configure system software.
- 02.21 Install and configure applications software.
- 02.22 Configure software for accessibility by disabled individuals.
- 02.23 Install and configure applications software upgrades.
- 02.24 Describe modifications necessary to an operating system (such as modifying parameters, how to handle conflicting interrupts, etc.) when installing, configuring and upgrading typical applications software.
- 02.25 Install and configure client software for connecting to LANs, WANs, and the Internet (network client, WWW browser, terminal emulation, file transfer, etc.).
- 02.26 Install and configure client software for client/server and network-based applications (e-mail, videoconferencing, database, etc.)

- 02.27 Install applications on a server and configure clients for network access.
 - 02.28 Install and configure applications software at an advanced level, such as one of the following: Computer-Aided Design (CAD), Geographical Information System (GIS), statistical software, desktop publishing, music editing system or game software.
 - 02.29 Identify several of the most prominent current programming languages.
 - 02.30 Characterize the stages of the system development life cycle.
 - 02.31 Differentiate between two common strategies for problem solving.
 - 02.32 Describe the program design and development process.
 - 02.33 Differentiate between structured programming and object-oriented programming.
 - 02.35 Apply principles of good design and documentation when analyzing programs.
 - 02.36 Name several emerging software technologies.
 - 02.37 Describe the potential impact of the named emerging software technologies.
- 03.0 Demonstrate understanding of networked environments. The student will be able to:
- 03.01 Identify several advantages and disadvantages of networked and non-network environments.
 - 03.02 Describe current network environments, such as peer-to-peer and client/server.
 - 03.03 Identify and discuss issues (such as security, privacy, redundancy, etc.) related to networked environments.
 - 03.04 Identify and discuss issues related to naming conventions for user-ids, email, passwords, and network devices.
 - 03.05 List and define layers in the OSI and TCP/IP network protocol models.
 - 03.06 Identify and describe current relevant IEEE network standards.
 - 03.07 Illustrate typical network topologies.
 - 03.08 Identify advantages and disadvantages of each topology.
 - 03.09 Describe the major functions of LAN hardware protocols such as Ethernet, token ring, FDDI, and arcnet.
 - 03.10 Describe LAN software protocols such as IPX/SPX, TCP/IP, and NetBEUI.
 - 03.11 Discuss the nature of IP addresses and MAC addresses, and mapping between protocol addressing schemes.
 - 03.12 Describe the major functions of network server hardware components.
 - 03.13 Describe server and client hardware requirements.
 - 03.14 Describe the major functions of network client hardware components.
 - 03.15 Differentiate between hardware used to implement different topologies such as token ring and Ethernet.
 - 03.16 Recognize and describe current cable technologies (such as twisted-pair, coaxial, and fiber optic) and identifying issues associated with plenum versus and non-plenum cable plants.

- 03.17 Describe current wireless technologies such as satellite, microwave, spread spectrum RF, and infrared.
- 03.18 Identify advantages and disadvantages of wireless and cable technologies.
- 03.19 Cite appropriate uses of wireless and cable technologies.
- 03.20 Describe the major functions of network connectivity hardware, such as hubs, repeaters, bridges, routers, switches, and gateways.
- 03.21 Describe the hardware needed to connect a LAN to the Internet.
- 03.22 Describe the function of network storage devices and other peripherals (RAID, CD towers, printers, fax machines, scanners, printer/fax/copiers, imaging devices, and document center equipment, etc.).
- 03.23 Set up and configure a server (including installation of NICs and NIC drivers).
- 03.24 Set up and configure client hardware (including installation of NICs and NIC drivers).
- 03.25 Set up network storage devices and other peripherals and connect to the network.
- 03.26 Describe the major functions of network server software components.
- 03.27 Compare and contrast major functions and features of current network operating systems (including directory services).
- 03.28 Install and configure a LAN server.
- 03.29 Install and configure drivers for NICs and network peripherals.
- 03.30 Configure protocol stacks.
- 03.31 Describe the major functions of network client software components.
- 03.32 Install and configure client software on multiple hardware platforms.
- 03.33 Install and configure drivers for NICs and network peripherals (including printers).
- 03.34 Configure the client to support multiple protocols.
- 03.35 Differentiate between telecommunications and data communications.
- 03.36 Compare and contrast digital communications lines and cable characteristics (e.g. ISDN, DSL, T-1 and T-3).

04.0 Demonstrate understanding of internet structure, organization and navigation. The student will be able to:

- 04.01 Describe the origin, structure, and history of the Internet.
- 04.02 Describe Internet organization, such as the Internic, domains and requests for comments (RFCs).
- 04.03 Differentiate between the Internet and the WWW.
- 04.04 Define Internet push technologies, such as e-mail marketing vs. Web page banner advertising.
- 04.05 Describe Web e-commerce.
- 04.06 Differentiate among an Intranet site, an extranet site, and an Internet site.
- 04.07 Characterize the role of the Internet in today's

society.

- 04.08 Describe several major ethical issues related to Internet use.
 - 04.09 Identify several legal issues related to Internet use.
 - 04.10 Cite several examples to demonstrate how the Internet has affected intellectual property rights.
 - 04.11 Identify several examples to demonstrate how the Internet has affected personal security and privacy.
 - 04.12 Describe the World Wide Web (WWW).
 - 04.13 Cite several examples to show how the WWW has affected our society.
 - 04.14 Demonstrate the use of typical file types and protocols (http:, ftp:, mailto:, gopher:, telnet:, etc.).
 - 04.15 Demonstrate the use of typical remote access mechanisms.
 - 04.16 Describe components of URL and their meanings (including types).
 - 04.17 Use Internet tools effectively and utilities such as e-mail, browsers, search engines, news groups, list serves, chat rooms, file transfers.
 - 04.18 Install and configure an Internet browser.
 - 04.19 Install and configure browser add-ons and plug-ins.
 - 04.20 Describe the Human-Computer Interaction (HCI) factors that impact the design of a Web page and Web site
 - 04.21 Describe and use the process of storyboarding a Web site.
 - 04.22 Describe format, structure and design principles for Web sites.
 - 04.23 Evaluate Web sites using principles of good format, structure, and design.
 - 04.24 List several Web authoring tools in order of complexity of use.
 - 04.25 Describe handicapped-accessibility features for a Web site.
 - 04.26 Evaluate a Web site for handicapped accessibility.
- 05.0 Perform technical system support functions. The student will be able to:
- 05.01 Create and follow established procedures and guidelines to manage user accounts.
 - 05.02 Identify network security systems
 - 05.03 Install system and application upgrades and patches as required.
 - 05.04 Create documentation to establish baselines for maintenance and repairs.
 - 05.05 Update documentation including warranty and maintenance agreements.
 - 05.06 Create and perform back-ups following organizational plan.
 - 05.07 Test contingency systems to reduce damage due to disaster

- 05.08 Perform data recovery as needed.
- 05.09 Document statistics to identify problems and plans for systems upgrades.

06.0 Perform troubleshooting activities. The student will be able to:

- 06.01 Describe the use of diagnostic test equipment.
- 06.02 Describe features of diagnostic software.
- 06.03 Use system, software, and network documentation.
- 06.04 Locate and use online documentation resources.
- 06.05 Describe effective troubleshooting strategies and techniques to resolve basic hardware problems including interviewing and observation.
- 06.06 Recognize and resolve basic hardware problems.
- 06.07 Recognize and resolve basic software configuration problems.
- 06.08 Recognize and resolve system level software conflicts (e.g., IRQ conflicts).
- 06.09 Recognize and resolve problems originating from software interaction.
- 06.10 Recognize and resolve problems originating from software/hardware interaction.
- 06.11 Isolate and replace faulty components (board level only).
- 06.12 Effectively use appropriate research tools to locate information needed to solve system problems.
- 06.13 Perform systems troubleshooting tasks on multiple platforms.
- 06.14 Follow a structured methodology and use effective troubleshooting strategies and techniques to resolve problems with systems, peripheral devices and/or drivers, and network problems.
- 06.15 Use sniffers, cable testers, and other network troubleshooting tools.
- 06.16 Use utilities such as ping, telnet, and trace route in testing a network.
- 06.17 Test WAN links using loop back techniques.
- 06.18 Identify when to escalate the issue, including determining appropriate entities involved.
- 06.19 Observe and document results.
- 06.20 Test the solution to ensure quality.
- 06.21 Document the final solution.
- 06.22 Disseminate the solution.
- 06.23 Follow up with the customer.

07.0 Perform systems monitoring activities. The student will be able to:

- 07.01 Create and review back up log.
- 07.02 Create and review server log.
- 07.03 Create and review application logs.
- 07.04 Create and review resolution logs.
- 07.05 Create and review security logs.
- 07.06 Prepare a schedule to verify applications status.
- 07.07 Prepare a schedule to verify backup status.
- 07.08 Prepare a schedule to verify server status

- 07.09 Track network performance as compare to an established baseline.
- 07.10 Identify problem trends and create resolution plans.
- 07.11 Document statistical analysis and monitoring activities.

08.0 Perform Customer Service Skills - The student will be able to:

- 08.01 Identify and recognize user's state of mind and attitude.
- 08.02 Determine the customer needs using system analysis strategies.
- 08.03 Listen to the customer and ask appropriate questions.
- 08.04 Maintain a professional demeanor when dealing with difficult customers.
- 08.05 Provide suggested solutions using knowledge base.
- 08.06 Project professional appearance and demeanor.
- 08.07 Promote company services, products, and policies when appropriate.
- 08.08 Use tact when dealing with customers and competitors.
- 08.09 Maintain professional work ethics and follow policies and procedures.
- 08.10 Respect customer work space/environment.
- 08.11 Relate all information to customer in a manner that the customer can understand.
- 08.12 Set realistic expectations when establishing deadlines for customer solutions.
- 08.13 Communicate action plan including timelines.
- 08.14 Recognize the existence of internal/external customers and follow appropriate guidelines for each.

09.0 Perform User-training Activities - The student will be able to:

- 09.01 Establish training needs based on systems analysis techniques
- 09.02 Direct user to appropriate resources based on established needs.
- 09.03 Demonstrate skill sets expected of the user
- 09.04 Evaluate user's ability to perform required tasks
- 09.05 Obtain customer feedback on training
- 9.06 Provide one-on-one basic training when needed/appropriate
- 09.07 Explain computer-related corporate user policies
- 09.08 Demonstrate basic resource usage
- 09.09 Share relevant knowledge

10.0 Perform Computer Information systems Analysis Activities - The student will be able to:

- 10.01 Prepare appropriate systems and analysis charts and other visual aids.
- 10.02 Describe the major steps in the systems development cycle.
- 10.03 Perform basic business related tasks using the most appropriate software applications.
- 10.04 Identify situations where software packages and/or custom developed packages need to be integrated with each other.

- 10.05 Identify situations where software packages and/or hardware need to be integrated with software/hardware available on other types of computers.
- 10.06 Select appropriate hardware devices to accomplish assigned tasks.
- 10.07 Identify appropriate vendor sources for software, hardware and auxiliary supplies.

11.0 Demonstrate Professional Development Skills - The student will be able to:

- 11.01 Identify corporate strategies and policies.
- 11.02 Maintain professional contact for future projects.
- 11.03 Build mentor relationships.
- 11.04 Anticipate future industry trends.
- 11.05 Continue education.
- 11.06 Review and analyze other industry productions.
- 11.07 Use and experiment with the technology.
- 11.08 Network with local professionals in the industry..
- 11.09 Read industry journals and magazines.
- 11.10 Attend seminars, workshops, and tradeshow.

12.0 Demonstrate Employability Skills - The student will be able to:

- 12.01 Identify appropriate attire and grooming for a business office.
- 12.02 Identify sources of employment opportunities.
- 12.03 Discuss employer expectations regarding attendance, punctuality, initiative, teamwork, etc.
- 12.04 Discuss employee rights regarding privacy, discrimination, due process, safety, etc.
- 12.05 Explain the importance of having a written job description.
- 12.06 List several functions of each representative computer service oriented job and career path.
- 12.07 List several functions of each representative computer service oriented job and career path.
- 12.08 Complete employment forms.
- 12.09 Classify behaviors considered to be appropriate or inappropriate in a job interview situation.
- 12.10 Compose and type a follow-up letter.
- 12.11 Compose and type a letter of application and a resume.
- 12.12 Compose and type a letter of resignation.
- 12.13 Demonstrate job interview skills.
- 12.14 Identify methods for securing and employment reference.

13.0 Demonstrate general organizational computing workplace competencies - The student will be able to:

- 13.01 Follow oral and written instructions.
- 13.02 Prepare, outline, and deliver a short oral presentation.
- 13.03 Participate in group discussion as a member and as a leader.
- 13.04 Obtain appropriate information form graphics, maps, or

signs.

- 13.05 Prepare visual material to support an oral presentation.
- 13.06 Demonstrate self-motivation and responsibility to complete an assigned task.
- 13.07 List the steps in problem solving.
- 13.08 Choose appropriate action in situations requiring effective time management.
- 13.09 Identify and discuss issues contained within professional codes of conduct.
- 13.10 Identify and discuss software licensing issues.
- 13.11 Identify and discuss property rights and licensing issues.
- 13.12 Identify and discuss privacy issues.
- 13.13 Identify and discuss encryption issues.
- 13.14 Identify legal liability issues.
- 13.15 Describe appropriate measures for planning and managing a large project.
- 13.16 Define an implementation schedule for a large project.
- 13.17 Describe appropriate measures for planning and implementing corporate wide upgrade of hardware and software.