

Florida Department of Education
CURRICULUM FRAMEWORK

Program Title: Internet Services Technology
Occupational Area: Business Technology Education
Program Classification: PSV
Program Type: AS* or AAS*
CIP Number: 1507.039902 (AS)/ 0507.039902 (AAS)
Length: 63 College Credits
SOC Code: 15-1081

I. MAJOR CONCEPTS/CONTENT: The purpose of this program is to prepare students for employment as Internet/Intranet Technicians, Web Technicians, Internet/Intranet Administrators, Web Administrators, Internet/Intranet Developers, Web Site Developers, Internet/Intranet Masters, Web Masters, Internet support specialists, web page designers, web database administrators, Internet managers, web technicians, web site developers, web managers, web architects or to provide supplemental training for persons previously or currently employed in these occupations.

The content prepares individuals to work in Internet, Intranet, and Extranet environments; installing, configuring, designing and managing Intranet and web-based resources.

II. LABORATORY ACTIVITIES: Laboratory activities are an integral part of this program and include the use of data entry systems, computers, computer software, and networking/internet networking hardware and software.

III. COMPLEMENTARY SOFTWARE AND EQUIPMENT: The following tools and equipment are required for this program: PCs; peripheral devices, scanners, drawing tablets, digital cameras, servers, web cams; network operating systems software, Configuration management software, browser software, FTP client software, design software, testing software, project management software, quantitative analysis software, web analysis software, database software, file compression software, encryption software, multi-media software; HTML, image, video and sound editors.

IV. INSTRUCTOR QUALIFICATIONS:

Preferred:

Two or more years of related work Masters Degree in Field or Masters degree and 18 hours in Communications/Multimedia Design, Management Information Systems, Computer Programming, Information Studies or Information Science. Experience working in Internet related fields such as Web Master, Internetwork Systems Administrator, Web Programming, WebDBA or related area. Industry Certification in appropriate area.

Minimum:

Associate Degree in experience. Industry Certification in appropriate

area.

V. WORK/LEARN CYCLES: The cooperative method of instruction including internship and 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: Effective distance learning in technical degree programs is difficult to accomplish due to the need for student participation in skills activities as part of the curriculum. Complete programs can be offered successfully for those students in which time, not geographical distance is the restricting factor. This is accomplished through the use of distance learning materials for concept/theory mastery and skills labs that allow the student to complete the skills objectives of the curriculum across a variety of schedules.

Several 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: developing and building teams, creativity, persistence, tenacity, logic/reasoning ability, technical aptitude, flexibility, detail orientation, stamina, forthrightness, sense of humor, vision, solutions-orientation, visually intuitive, empathy, and dependability.

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

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.

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

- 01.0 Demonstrate proficiency with Internet structure, organization, and navigation.
- 02.0 Demonstrate understanding of networked environments, hardware and software.
- 03.0 Perform server installation and configuration activities.
- 04.0 Understand, install and configure computer hardware
- 05.0 Understand, install and configure computer software
- 06.0 Perform enterprise architecture-related tasks.
- 07.0 Perform web design/development activities.
- 08.0 Perform programming and scripting activities.
- 09.0 Perform testing/troubleshooting activities.
- 10.0 Perform security activities.
- 11.0 Perform web site management activities
- 12.0 Perform e-commerce-related tasks.
- 13.0 Perform quantitative analysis activities.
- 14.0 Demonstrate professional development skills.
- 15.0 Perform Documentation and Technical reference activities
- 16.0 Demonstrate employability skills.
- 17.0 Perform general organizational 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 required the inclusion of a minimum of 15 credits of general education coursework according to SACS.

**Florida Department of Education
CURRICULUM FRAMEWORK
Student Performance Standards**

Program Title: Internet Services Technology

01.0 Demonstrate proficiency with Internet structure, organization, and navigation-The student will be able to:

- 1.01 Describe the origin of the Internet.
- 1.02 Outline the history of the Internet.
- 1.03 Describe Internet organization, such as the Internic, domains and requests for comments (RFCs).
- 1.04 Describe the structure of the Internet.
- 1.05 Differentiate between the Internet and the WWW.
- 1.06 Define Internet push technologies, such as e-mail marketing vs. Web page banner advertising.
- 1.07 Differentiate among an Intranet site, an extranet site, and an Internet site.
- 1.08 Characterize the role of the Internet in today's society.
- 1.09 Describe several major ethical issues related to Internet use.
- 1.10 Identify several legal issues related to Internet use.
- 1.11 Identify several examples to show how the Internet has affected intellectual property rights.
- 1.12 Identify several examples to show how the Internet has affected personal security and privacy.
- 1.13 Describe the World Wide Web (WWW).
- 1.14 Provide several examples to show how the WWW has affected our society.
- 1.15 Demonstrate the use of typical file types and protocols (http:, ftp:, mailto:, gopher:, telnet:, etc.).
- 1.16 Demonstrate the use of typical remote access mechanisms.
- 1.17 Differentiate among all valid WWW file types.
- 1.18 Differentiate among all WWW multimedia file types.
- 1.19 Describe components of URL and their meanings (including types).
- 1.20 Effectively use Internet tools and utilities such as e-mail, browsers, search engines, news groups, list serves, chat rooms, file transfers.
- 1.21 Install and configure an Internet browser.
- 1.22 Install and configure browser add-ons and plug-ins.
- 1.23 Install and configure a newsgroup reader.
- 1.24 Install and configure a chat group client.

02.0 Demonstrate understanding of networked environments, hardware, and software-The student will be able to:

- 02.01 Give several advantages and disadvantages of networked and non-networked environments.
- 02.02 Describe current network environments, such as peer-to-peer and client/server.
- 02.03 Identify and discuss issues (such as security, privacy, redundancy, etc.) related to networked environments.
- 02.04 Identify and discuss issues related to naming conventions for user-ids, email, passwords, and network devices.
- 02.05 List and define layers in the OSI and TCP/IP network protocol

models.

- 02.06 Identify and describe current relevant IEEE network standards.
- 02.07 Illustrate typical network topologies.
- 02.08 Identify advantages and disadvantages of each topology.
- 02.09 Describe the major functions of LAN hardware protocols such as Ethernet, token ring, FDDI, and arcnet.
- 02.10 Describe LAN software protocols such as IPX/SPX, TCP/IP, and NetBEUI.
- 02.11 Discuss the nature of IP addresses and MAC addresses, and mapping between protocol addressing schemes.
- 02.12 Describe the major functions of network server hardware and software components.
- 02.13 Describe server hardware requirements.
- 02.14 Describe the hardware needed for hosting a Web site.
- 02.15 Identify a variety of specialized servers (e.g. proxy, e-mail, DHCP, Web, etc.)
- 02.16 Describe the hardware requirements for specialized servers (such as e-mail, database).
- 02.17 Describe the major functions of network client hardware components.
- 02.18 Describe client hardware requirements.
- 02.19 Differentiate between hardware used to implement different topologies such as token ring and Ethernet.
- 02.20 Recognize and describe current cable technologies such as twisted-pair, coaxial, and fiber optic, and identifying issues associated with plenum versus non-plenum cable plants.
- 02.21 Describe current wireless technologies such as satellite, microwave, spread spectrum RF, and infrared.
- 02.22 Identify advantages and disadvantages of wireless and cable technologies.
- 02.23 Cite appropriate uses of wireless and cable technologies.
- 02.24 Describe the major functions of network connectivity hardware, such as hubs, repeaters, bridges, routers, switches, and gateways.
- 02.25 Describe the hardware needed to connect a LAN to the Internet.
- 02.26 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.).
- 02.27 Compare and contrast major functions and features of current network operating systems (including directory services).
- 02.28 Differentiate between telecommunications and data communications.
- 02.29 Compare and contrast digital communications lines and cable characteristics (e.g. ISDN, DSL, T-1 and T-3).

03.0 Perform server installation and configuration activities-The student will be able to:

- 03.01 Evaluate, install and configure software for Web page authoring.
- 03.02 Install and configure drivers for NICs and network peripherals.
- 03.03 Configure protocol stacks.
- 03.04 Configure a server for multiple network protocols and frame types.
- 03.05 Configure a server to handle multiple languages for international applications.
- 03.06 Install and configure an Internet server.
- 03.07 Install, configure and set up a proxy server and a gateway.
- 03.08 Set up a server for remote access.

- 03.09 Address security issues raised by the ability to access server remotely.
- 03.10 Discuss the functions of authentication servers, RADIUS, and VPN.
- 03.11 Configure commerce server and database
- 03.12 Install and configure list-serve, chat, and news group servers.
- 03.13 Plan component integration.
- 03.14 Test component integration.
- 03.15 Integrate components.

04.0 Understand, Install and configure computer hardware. The student will be able to:

- 04.01 Explain the use of binary numbers to represent instructions and data.
- 04.02 Describe the hardware implications of the use of binary representation of instructions and data.
- 04.03 Convert numbers among decimal, binary, and hexadecimal representation.
- 04.04 Perform binary arithmetic.
- 04.05 Identify various coding schemes (ASCII, etc.).
- 04.06 Discuss various data types (signed and unsigned integers, floating point, etc)
- 04.07 Identify the major hardware platforms
- 04.08 Describe distinguishing features of the major hardware platforms
- 04.09 Describe the functions of major hardware components of a computer system.
- 04.10 Recognize and correctly identify computing hardware components.
- 04.11 Describe emerging hardware technologies and discuss their potential impact.
- 04.12 Implement proper procedures for handling and safeguarding equipment.
- 04.13 Perform preventive maintenance tasks on microcomputer systems.
- 04.14 Describe procedures for proper disposal of computer components.
- 04.15 Set up and configure systems and peripherals.
- 04.16 Set up BIOS.
- 04.17 Install and configure storage and I/O device interfaces.
- 04.18 Install and configure multimedia devices and interfaces.
- 04.19 Install and configure network interface cards

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

- 05.01 Describe the functions and major components (BIOS, task management, etc.) of a computer operating system.
- 05.02 Identify current operating systems and describe their important features.
- 05.03 Use an operating system for activities such as data and file management.
- 05.04 Identify current systems utilities and describe their functions.
- 05.05 Use system software to perform routine maintenance tasks such as backup, hard drive defragmentation, etc.
- 05.06 Use operating systems of different brands and platforms.
- 05.07 Use both stand-alone operating systems and network operating systems.
- 05.08 Create, use, and maintain system configuration files.
- 05.09 Describe the major features and functions of the major categories of applications software (word processing, database, spreadsheet, presentation, email, browsers, etc.).

- 05.10 Use basic features of office productivity software.
- 05.11 Learn to perform independently (previously untaught) tasks using office productivity software.
- 05.12 Use software produced by multiple vendors.
- 05.13 Transmit and exchange data in a multiple vendor software environment.
- 05.14 Install and configure a microcomputer operating system.
- 05.15 Describe procedures for uninstalling operating system software.
- 05.16 Install and configure system software.
- 05.17 Install and configure applications software.
- 05.18 Configure software for accessibility by disabled individuals.
- 05.19 Install and configure applications software upgrades.
- 05.20 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.
- 05.21 Install and configure client software for connecting to LANs, WANs, and the Internet (network client, WWW browser, terminal emulation, file transfer, etc.).
- 05.22 Install and configure client software for client/server and network-based applications (e-mail, videoconferencing, database, etc.).
- 05.23 Install internetworking applications on a server and configure clients for network access.
- 05.24 Describe the major functions of network client software components.
- 05.25 Install and configure client software on multiple hardware platforms.
- 05.26 Install and configure drivers for NICs and network peripherals (including, printers).
- 05.27 Configure the client to support multiple protocols.
- 05.28 Install and configure client/server applications (such as e-mail, scheduling, etc) on a server.
- 05.29 Install and configure network-based services such as videoconferencing, integrated voicemail/email/fax, large document storage and retrieval, etc.

06.0 Perform enterprise architecture-related tasks - The student will be able to:

- 06.01 Describe the Human-Computer Interaction (HCI) factors that impact the design of a Web page and Web site.
- 06.02 Determine the purpose of establishing an Internet site
- 06.03 Identify the intended audience that will access the Internet site
- 06.04 Determine user needs including secondary applications including database needs and select appropriate applications
- 06.05 Identify business processes to be automated.
- 06.06 Determine client specifications.
- 06.07 Determine design standards based on intended audience
- 06.08 Formulate architecture including bandwidth specifications
- 06.09 Establish performance standards and set baseline
- 06.10 Determine security standards that will meet business requirements.
- 06.11 Install and configure system based on planning

07.0 Perform web design/development activities - The student will be able to:

- 07.01 Describe and use the process of storyboarding a Web site.

- 07.02 Describe format, structure and design principles for Web sites.
- 07.03 Evaluate Web graphic utilities and creation tools, including those for animated graphics.
- 07.04 Identify existing resources and constraints.
- 07.05 Evaluate design based on current industry and in-house standards
- 07.06 Create site navigation plan including directory structure
- 07.07 Procure and incorporate standard and animated graphics into a Web page.
- 07.08 Obtain in-house content and determine needs for secondary content providers.
- 07.09 Design page templates to implement on final site
- 07.10 Create a Web page using authoring tools.
- 07.11 Code page(s) using current Web programming languages.
- 07.12 Check page for cross-browser capability and other access issues
- 07.13 Upload pages and run site analysis
- 07.14 Incorporate sound files onto a Web page.
- 07.15 Incorporate a streaming video file onto a Web page.
- 07.16 Incorporate a video file for download into a Web page.
- 07.17 Create an animated graphic.
- 07.18 Perform simple graphic modifications using a graphics utility.
- 07.19 Create virtual Web pages using a virtual reality modeling language.
- 07.20 Incorporate an e-mail link on a Web page.
- 07.21 Incorporate internal and external links on a Web page.
- 07.22 Incorporate frames, tables, and file transfer capabilities on a Web page.
- 07.23 Incorporate handicapped-accessibility options into the Web site.
- 07.24 Set up and configure a search engine for a Web site.
- 07.25 Create a Web form and produce e-mail results.
- 07.26 Create a Web database interface.
- 07.27 Discuss the issue of ODBC compliance.

08.0 Perform programming and scripting activities - The student will be able to:

- 08.01 Identify several of the most prominent current programming languages.
- 08.02 Characterize the stages of the system development life cycle.
- 08.03 Differentiate between two common strategies for problem solving.
- 08.04 Describe the program design and development process.
- 08.05 Differentiate between structured programming and object-oriented programming.
- 08.06 Use procedural and object-oriented constructs of programming, scripting, and/or macro languages to create and test programs including batch files and menu programs.
- 08.07 Apply principles of good design and documentation when developing programs.
- 08.08 Write scripting code to handle error checking in client forms.
- 08.09 Write CGI programs to allow for interactions between the client and server.
- 08.10 Write Java applets.
- 08.11 Identify development tools and list in order of complexity of use.
- 08.12 Review design specifications.
- 08.13 Design and test algorithms.
- 08.14 Write program according to specs.
- 08.15 Test and debug code.

08.16 Revise code based on testing procedures

09.0 Perform testing/troubleshooting activities - The student will be able to:

- 09.01 Describe the use of diagnostic test equipment.
- 09.02 Describe features of diagnostic software.
- 09.03 Use system, software, and network documentation.
- 09.04 Locate and use online documentation resources.
- 09.05 Describe effective troubleshooting strategies and techniques to resolve basic hardware, software, and network problems.
- 09.06 Recognize and resolve basic hardware, software configuration, and peripheral device problems.
- 09.07 Use effective troubleshooting strategies and techniques to resolve network problems, including network interfaces, cabling, or other network components (hubs, switches, etc.).
- 09.08 Describe handicapped-accessibility features for a Web site.
- 09.09 Describe appropriate procedures and techniques for disaster prevention and recovery (surge suppressors, UPS, use of anti-virus software, replacement equipment plans, backups of software and data, offsite storage of backup media, etc.).
- 09.10 Describe appropriate security procedures and practices, including physical security and protection of resources through software measures (passwords, antivirus software, data encryption, etc.).
- 09.11 Develop testing plan and procedures.
- 09.12 Develop a system baseline.
- 09.13 Perform capacity testing against system baseline.
- 09.14 Evaluate network performance based on test outcomes.
- 09.15 Evaluate database performance based on test outcomes.
- 09.16 Evaluate server performance based on test outcomes.
- 09.17 Evaluate client performance based on test outcomes.
- 09.18 Identify bottlenecks and create a plan to improve throughput.
- 09.19 Optimize system based on total system evaluation.
- 09.20 Assess accessibility standards
- 09.21 Evaluate security system.
- 09.22 Conduct ongoing systems analysis.
- 09.23 Revise system as required.
- 09.24 Obtain final client approval for implementation and system changes.

10.0 Perform security activities - The student will be able to:

- 10.01 Complete a security needs evaluation.
- 10.02 Design security architecture.
- 10.03 Select security protocol.
- 10.04 Select and set encryption methodology.
- 10.05 Incorporate password protection on a Web page.
- 10.06 Incorporate Internet cookies into a Web page.
- 10.07 Configure firewall.

11.0 Perform Web Site Management Activities- The student will be able to:

- 11.01 Describe the process of obtaining an Internet domain address.
- 11.02 Register an Internet site.
- 11.03 Notify appropriate external search engines of the Web site.
- 11.04 Compare features of currently available site management tools.

- 11.05 Install and configure Web site management software.
- 11.06 Create and maintain a Web site using a Web management tool.
- 11.07 Implement appropriate Web site security measures.
- 11.08 Use and evaluate the results of a Web site visit-recording tool.

12.0 Perform e-commerce-related tasks - The student will be able to:

- 12.01 Describe Web e-commerce.
- 12.02 Analyze e-commerce models.
- 12.03 Develop an e-commerce business plan.
- 12.04 Develop e-commerce marketing plan.
- 12.05 Identify components and procedures necessary to process credit card transactions
- 12.06 Integrate credit card transaction process.
- 12.07 Implement shopping cart software.
- 12.08 Set up and configure online catalog to market products.
- 12.09 Establish transaction storage and reporting system
- 12.10 Publish web site.

13.0 Perform quantitative analysis activities - The student will be able to:

- 13.01 Determine type/tools available for analysis.
- 13.02 Determine traffic patterns.
- 13.03 Gather user data.
- 13.04 Analyze data.
- 13.05 Make recommendations for site improvements.

14.0 Demonstrate professional development skills - The student will be able to:

- 14.01 Identify corporate strategies and policies.
- 14.02 Maintain professional contact for future projects.
- 14.03 Build mentor relationships.
- 14.04 Anticipate future industry trends.
- 14.05 Continue education.
- 14.06 Review and analyze other industry productions.
- 14.07 Use and experiment with the technology.
- 14.08 Network with local professionals in the industry.
- 14.09 Read industry journals and magazines.
- 14.10 Attend seminars, workshops, and tradeshow.

15.0 Perform Documentation and Technical reference activities - The student will be able to:

- 15.01 Use technical vocabulary appropriately.
- 15.02 Locate information in technical references.
- 15.03 Prepare technical reports.
- 15.04 Describe appropriate documentation procedures and practices.
- 15.05 Effectively use locally maintained systems, software, and network documentation.
- 15.06 Produce and maintain system documentation, such as inventory, costs, installed software, and procedures.

- 15.07 Perform Documentation and Technical reference activities.

- 15.08 Understand, Install and configure computer hardware.
- 15.09 Understand, Install and configure computer software
- 15.10 Perform Troubleshooting activities.
- 15.11 Demonstrate understanding of networked environments.
- 15.12 Demonstrate proficiency with Internet structure, organization, and navigation.
- 15.13 Maintain visual network documentation, such as cabling diagrams.
- 15.14 Describe effective strategies for online research.
- 15.15 Locate technical information online.
- 15.16 Evaluate information located through online research.
- 15.17 Cite correctly Internet-based resources.

16.0 Demonstrate Employment Skills - The student will be able to:

- 16.01 Identify appropriate attire and grooming for a business office.
- 16.02 Identify sources of employment opportunities.
- 16.03 Discuss employer expectations regarding attendance, punctuality, initiative, teamwork, etc.
- 16.04 Discuss employee rights regarding privacy, discrimination, due process, safety, etc.
- 16.05 Explain the importance of having a written job description.
- 16.06 List representative jobs and career paths for people trained in the computer networking support area.
- 16.07 List several functions of each representative computer service oriented job and career path.
- 16.08 Complete employment forms.
- 16.09 Classify behaviors considered to be appropriate or inappropriate in a job interview situation.
- 16.10 Compose and type a follow-up letter.
- 16.11 Compose and type a letter of application and a resume.
- 16.12 Compose and Type a letter of resignation.
- 16.13 Demonstrate job interview skills.
- 16.14 Identify methods for securing an employment reference.

17.0 Perform general organizational computing workplace competencies - The student will be able to:

- 17.01 Follow oral and written instructions.
- 17.02 Prepare, outline, and deliver a short oral presentation.
- 17.03 Participate in group discussion as a member and as a leader.
- 17.04 Obtain appropriate information from graphics, maps, or signs.
- 17.05 Prepare visual material to support an oral presentation.
- 17.06 Demonstrate self-motivation and responsibility to complete an assigned task.
- 17.07 List the steps in problem solving.
- 17.08 Choose appropriate action in situations requiring effective time management.
- 17.09 Identify and discuss issues contained within professional codes of conduct.
- 17.10 Identify and discuss software licensing issues.
- 17.11 Identify and discuss property rights and licensing issues.
- 17.12 Identify and discuss privacy issues.
- 17.13 Identify and discuss encryption issues.
- 17.14 Identify legal liability issues.
- 17.15 Describe appropriate measures for planning and managing a large project.
- 17.16 Define an implementation schedule for a large project.

- 17.17 Describe appropriate measures for planning and implementing corporate wide upgrade of hardware and software.
- 17.18 Identify potential sources of employee/employer or employee/employee conflict and discuss possible approaches to resolve such disagreements.
- 17.19 Use appropriate communication skills, courtesy, manners, and dress in the workplace.
- 17.20 Apply principles and techniques for being a productive, contributing member of a team.
- 17.21 Identify and use acceptable strategies for resolving conflict in the workplace
- 17.22 Apply principles and techniques for working productively with people of diverse cultures and backgrounds.
- 17.23 Identify techniques for stress management and prevention of job burn-out.
- 17.24 Use appropriate communication skills, telephone etiquette, courtesy, and manners when dealing with customers.
- 17.25 Communicate effectively with individuals lacking a technical background.
- 17.26 Identify clear detailed technical oral instructions.
- 17.27 Identify examples of effective end-user training strategies and techniques.