

INFORMATION TECHNOLOGY CAREER CLUSTER DESIGN

Information Support & Services Pathway – CIP Code 11.0301

Approved Pathway:

- 1) Includes minimum of three secondary-level credits.
- 2) Includes a work-based element.
- 3) Consists of a sequence: Introductory-level, Technical-level, and Application-level courses.
- 4) Supporting documentation includes Articulation Agreement(s), Certification, Program Improvement Plan, and a Program of Study.
- 5) Technical-level and Application-level courses receive .5 state-weighted funding in an approved CTE pathway.

INTRODUCTORY LEVEL

Computing Systems	10002/60002	1 credit
Computer Application	10004/60004	1 credit

TECHNICAL LEVEL

Computer Technology	10251	1 credit	Computer Maintenance	10252	1 credit
Info. Support & Services	10253	1 credit	IT Essentials: PC Hardware		
CISCO - Network Infrastructure Essentials	10255	1 credit	& Software	10254	1 credit
Info. Support & Services-Other	10299	1 credit	Particular Topics in Info. Support	10256	1 credit
Information Management	10051	1 credit	Database Applications	10053	1 credit
			Data Systems/Processing	10054	1 credit

APPLICATION LEVEL

Info Support & Services Workplace Exp.	10298	1 credit
Database Mgmt. & Data Warehousing	10052	1 credit
Particular Topics in Mgmt. Info. Sys.	10055	1 credit
Mgmt. Info. Sys.-Workplace Exp.	10098	1 credit
Mgmt. Information System-Other	10099	1 credit
Educational Trainer	10260	1 credit
Project Mgmt. & Res. Scheduling	21205	1 credit

KANSAS STATE CAREER CLUSTER COMPETENCY PROFILE
INFORMATION SUPPORT & SERVICES PATHWAY (C.I.P. 11.0301)

STUDENT _____
Rating Scale:

- 3 - Proficient Achievement**
- 2 - Limited Achievement**
- 1 - Inadequate Achievement**
- 0 - No Exposure**

INFORMATION TECHNOLOGY CLUSTER

Graduation Date _____
I certify that the student has received training in the areas indicated.

Instructor Signature _____

Instructor Signature _____

Instructor Signature _____

Instructor Signature _____

**COMMON CAREER TECHNICAL CORE –
 CAREER READY STANDARDS**

1. Act as a responsible and contributing citizen and employee
2. Apply appropriate academic and technical skills
3. Attend to personal health and financial well-being
4. Communicate clearly, effectively and with reason
5. Consider the environmental, social and economic impacts of decisions
6. Demonstrate creativity and innovation
7. Employ valid and reliable research strategies
8. Utilize critical thinking to make sense of problems and persevere in solving them.
9. Model integrity, ethical leadership and effective management
10. Plan education and career path aligned to personal goals
11. Use technology to enhance productivity
12. Work productively in teams while

using cultural/global competence

**COMMON CAREER TECHNICAL CORE –
 INFORMATION TECHNOLOGY CLUSTER
 STANDARDS**

1. Demonstrate effective professional communication skills and practices that enable positive customer relationships.
2. Use product or service design processes and guidelines to produce a quality information technology product or service.
3. Demonstrate the use of cross-functional teams in achieving IT project goals.
4. Demonstrate positive cyber citizenry by applying industry accepted ethical practices and behaviors.
5. Explain the implications of IT on business development.
6. Describe trends in emerging and evolving computer technologies and their influence on IT practices.

7. Perform standard computer backup and restore procedures to protect IT information.
8. Recognize and analyze potential IT security threats to develop and maintain security requirements.
9. Describe quality assurance practices and methods employed in producing and providing quality IT products and services.
10. Describe the use of computer forensics to prevent and solve information technology crimes and security breaches.
11. Demonstrate knowledge of the hardware components associated with information systems.
12. Compare key functions and applications of software and determine maintenance strategies for computer systems.

INTRODUCTORY LEVEL COURSES

10004-Computer Applications

3 2 1 0 1. Personal Information Management

- b. word usage, spelling, sentence structure, clarity, email
- c. Demonstrate knowledge of email etiquette.
- d. Send email messages.
- e. Access email attachments.
- f. Attach documents to messages.
- g. Demonstrate knowledge of contamination protection strategies for email.
- h. Save email messages / attachments.

3 2 1 0 2. Research and Internet

- a. Locate information using search engine(s) and Boolean logic.
- b. Navigate web sites using software functions.
- c. Select appropriate search procedures and approaches.
- d. Select search engine(s) to use.
- e. Access business and technical information using the Internet.
- f. Access commercial, government, and education resources.
- g. Evaluate Internet resources (e.g., accuracy of information).
- h. Explore browser features.
- i. Test Internet connection.
- j. Unpack files using compression software.
- k. Bookmark web addresses (URLs).
- l. Navigate web sites using software functions (e.g., Forward, Back, Go To, Bookmarks).
- a. Create calendars/schedules.
- i. Document results.
- j. Create tasks (to-do) list.
- k. Identify PIM applications (MS Outlook, Lotus Notes, and others).

- l. Manage daily/weekly/monthly schedule using applications such as Notes, MS Outlook, etc.
- m. Create and send notes, informal memos, reminder using PIM applications.
- n. Create reminder for oneself.
- o. Access email messages received.
- p. Access email system using login and password functions.
- m. Create e-mail messages in accordance with established business standards (e.g., grammar, Access library catalogs on the Internet.
- n. Compile a collection of business sites (e.g., finance and investment).
- o. Add plug-ins and helpers to the web browser.
- p. Archive files.
- q. Explore the multimedia capabilities of the World Wide Web.
- r. Utilize online tools.
- s. Communicate via email using the Internet.
- t. Explore collaboration tools.
- u. Explore electronic commerce.
- v. Explore newsgroups.
- w. Compile a collection of business sites (e.g., finance and investment).

3 2 1 0 3. Word Processing and Presentations

- a. Create documents (e.g., letters, memos, reports) using existing forms and templates.
- b. Employ word processing utility tools (e.g., spell checker, grammar checker, thesaurus).
- c. Format text using basic formatting functions.
- d. Retrieve existing documents.

- e. Safeguard documents using name & save functions.
- f. Create new word processing forms, style sheets, and templates.
- g. Enhance publications using different fonts, styles, attributes, justification, etc.
- h. Enhance publications using paint/draw functions.
- i. Format new desktop publishing files.
- j. Output desktop publishing files.
- k. Place graphics in document.
- l. Prepare publications using desktop publishing software.
- m. Use advanced formatting features (e.g., headers/footers/dropped caps, and indexing).
- n. Create computer presentation and handouts in accordance with basic principles of graphics design and visual communication.
- o. Edit presentations.
- p. Insert graphic elements (e.g., graph, clip art, table) in a slide.
- q. Identify hardware items that support presentation software (e.g., scanners, digital cameras, printers, and projection systems).
- r. Print a single slide, an entire presentation, an outline, and notes.
- s. Run slide shows manually and automatically.

3 2 1 0 4. Spreadsheets

- a. Create spreadsheets.
- b. Edit spreadsheets.
- c. Print spreadsheets.
- d. Retrieve existing spreadsheets.
- e. Save spreadsheets.
- f. Create charts and graphs from

spreadsheets.

- g. Group worksheets.
- h. Input/process data using spreadsheet functions.
- i. Perform calculations using simple formulas.

3 2 1 0 5. Data

- a. Enter data using a form.
- b. Locate/replace data using search and replace functions.
- c. Process data using database functions (e.g., structure, format, attributes, relationships, keys).
- d. Perform single- and multiple-table queries (e.g., create, run, save).
- e. Print forms, reports, and results or queries.
- f. Search a database table to locate records.
- g. Sort data using single and multiple field sorts.
- h. Verify accuracy of output.
- i. Maintain shared database of contact information.
- j. Manage daily/weekly/monthly schedule using applications.
- k. Participate in virtual group discussions and meetings.
- l. Apply basic commands of operating system software.
- m. Employ desktop operating skills.
- n. Apply appropriate file and disk management techniques.
- o. Recognize the need for regular backup procedures.
- p. Demonstrate knowledge of central processing unit (CPU) control and architecture.
- q. Identify CPU modes of operations.

- r. Define the role of memory management in an operating system.
- s. Demonstrate knowledge of network operating systems.
- t. Demonstrate knowledge of operating system architecture types.
- u. Demonstrate knowledge of the commands used to handle tasks in operating systems.
- v. Differentiate between microcomputer, minicomputer, and mainframe operating systems.
- w. Demonstrate knowledge of the basics of process management.
- x. Demonstrate knowledge of the system utilities used for file management.

3 2 1 0 6. Ethics and Security

- a. Demonstrate knowledge of potential internal and external threats to security.
- b. Assess exposure to security issues.
- c. Demonstrate knowledge of virus protection strategy.
- d. Ensure compliance with security rules, regulations, and codes.
- e. Explore ways to implement countermeasures.
- f. Implement security procedures in accordance with business ethics.
- g. Maximize threat reduction.
- h. Document security procedures.
- i. Understand how to follow a disaster plan.
- j. Identify sources of virus infections.
- k. Understand how to utilize backup and recovery procedures.
- l. Understand how to load virus detection and protection software.

- m. Maintain confidentiality.
- n. Understand how to provide for user authentication (e.g., assign passwords, access level).
- o. Understand how to remove viruses.
- p. Report viruses in compliance with company standards.
- q. Identify the features and benefits of quality planning.
- r. Identify the role of quality within the organization.

3 2 1 0 7. History / Quality Assurance

- a. Demonstrate knowledge of changes brought about by quality industry leaders in the world.
- b. Demonstrate knowledge of successful efforts by industry to improve quality and/or reduce costs.
- c. Demonstrate knowledge of the historical evolution of quality assurance/total quality management (e.g., Deming, ISO 9000).
- d. Demonstrate knowledge of the standards/requirements for the Baldrige award.
- e. Demonstrate knowledge of quality management terminology.

10002 Computing Systems

- 3 2 1 0 1. Apply knowledge of operating systems principles to ensure optimal functioning of system.
 - a. Interact with/respond to system messages using console device.
 - b. Apply basic commands of operating system software.

- c. Apply appropriate file and disk management techniques.
 - d. Employ desktop operating skills.
 - e. Follow power-up and log-on procedures.
 - f. Run applications. jobs in accordance with processing procedures.
 - g. Follow log-off and power-down procedure(s).
Handle materials and equipment in a responsible manner.
- 3 2 1 0 2. Clearly document procedures for future use.
- a. Document step-by-step installation and configuration procedures.
- 3 2 1 0 3. Communicate and recognize goal achievement.
- a. Communicate goal achievement.
 - b. Provide recognition for goal achievement.
- 3 2 1 0 4. Configure systems to provide optimal system interfaces.
- a. Apply concepts of privileged instructions and protected mode programming.
 - b. Configure peripheral device drivers (e.g., disk, display, printer, modem, keyboard, mouse, network).
 - c. Allocate disk space, non-sharable resources, and I/O devices.
 - d. Interface peripheral devices/controllers in the computer system (e.g., software and hardware interrupts, exceptions, Direct Memory Addressing [DMA], bus structures).
 - e. Identify standards and issues related to I/O programming and design of I/O interfaces.
 - f. Define hardware-software interface
- issues for a computer system.
- g. Apply advanced I/O concepts (e.g., disk caching, data compression, extended memory, magnetic disk/CD-ROM storage and formats).
- 3 2 1 0 5. Configure/modify system as needed.
- a. Build system software command structures using operating system macro facilities for computer systems.
 - b. Identify scheduling priority in programming.
 - c. Identify data requirements.
 - d. Review automated scheduling software.
 - e. Secure needed supplies and resources.
- 3 2 1 0 6. Determine audience and information needs
- a. Define research questions.
 - b. Identify target audience.
- 3 2 1 0 7. Document procedures and actions.
- a. Develop audit trails.
- 3 2 1 0 8. Ensure that hardware and software system components are compatible prior to performing installation.
- a. processor, memory, disk space, communications, printers, monitors).
 - b. Determine compatibility of hardware and Identify hardware requirements (e.g., software.
- 3 2 1 0 9. Ensure that software to be installed is licensed prior to performing installation.
- a. Verify conformance to licensing agreement.
- 3 2 1 0 10. Evaluate information systems problem-solving techniques and approaches.
- a. Evaluate systems engineering considerations.
- b. Identify potential problems in system implementation.
 - c. Summarize application planning, development, and risk management for information system.
 - d. Demonstrate knowledge of critical thinking skills and techniques.
 - e. Demonstrate knowledge of decision-making skills and techniques.
 - f. Develop a plan using data-oriented techniques.
 - g. Determine whether prototyping system is feasible.
 - h. Determine software design process, from specification to implementation.
 - i. Appraise software process and product life-cycle models.
 - j. Assess software design methods and tools.
- 3 2 1 0 11. Evaluate information.
- a. Determine the accuracy and completeness of the information gathered.
- 3 2 1 0 12. Explain data communications procedures, equipment and media.
- a. Demonstrate knowledge of the uses of data communications media.
 - b. Demonstrate knowledge of the uses of data communications equipment.
 - c. Demonstrate knowledge of key communications procedures.

- 3 2 1 0 13. Explain measurement techniques for increased productivity due to information systems implementation.
- Measure increases in productivity realized by the implementation of information systems.
- 3 2 1 0 14. Explain new and emerging classes of software.
- Identify new and emerging classes of software.
- 3 2 1 0 15. Explain the benefits of hosting a web site on a local server vs. at an ISP (Internet Service Provider).
- Compare the advantages and disadvantages of running your own server vs. using a server provider.
- 3 2 1 0 16. Explain the differences between local and wide area networks.
- Distinguish between local area networks and wide area networks.
- 3 2 1 0 17. Explain the features and functions of web browsing software.
- Identify how different browsers affect the look of a web page.
 - Demonstrate knowledge of the characteristics and uses of plug-ins.
 - Demonstrate knowledge of the role of browsers in reading files on the World Wide Web (text-only, hypertext).
- 3 2 1 0 18. Explain the features and functions of web page design software.
- Compare/contrast the features and functions of software editors available for designing web pages.
- 3 2 1 0 19. Explain the key functions and applications of software.
- Demonstrate knowledge of the function and operation of compilers and interpreters.
- Demonstrate knowledge of widely used software applications (e.g., word processing, database management, spreadsheet development).
 - Demonstrate knowledge of the key functions of systems software.
- 3 2 1 0 20. Explain the role of number systems in information systems.
- Identify the role the binary system in information systems.
 - Demonstrate knowledge of number systems and internal data representation.
- 3 2 1 0 21. Gather information.
- Identify potential sources of information.
 - Gather information from selected print and electronic sources.
 - Conduct interviews with selected human information sources.
 - Evaluate potential sources of information based on established criteria (e.g., affordability, relevance).
 - Target audience/user group as a key information source.
 - Determine priorities for the information that should be gathered.
 - Identify subject-matter experts.
- 3 2 1 0 22. Identify computer classifications and hardware.
- Identify types of computer storage devices.
 - Identify the hardware associated with telecommunications functions.
 - Identify major hardware components and their functions.
- Identify the three main classifications of computers (i.e. micro-, mid-range, & mainframe).
- 3 2 1 0 23. Identify new IT technologies and assess their potential importance and impact on the future.
- Identify new technologies relevant to information technology.
 - Assess the importance of new technologies to future developments & to future knowledge worker productivity.
 - Identify new & emerging drivers and inhibitors of information technology change.
- 3 2 1 0 24. Monitor and adjust goals.
- Obtain support for goals.
 - Provide support for goals.
 - Monitor goal achievement.
 - Adjust goals.
- 3 2 1 0 25. Operate computer-driven equipment and machines.
- Run applications/jobs in accordance with processing procedures.
 - Secure needed supplies and resources.
 - Interact with/respond to system messages using console device.
 - Follow log-off and power-down procedure(s).
 - Follow power-up and log-on procedures.
- 3 2 1 0 26. Perform customization as requested.
- Customize software to meet user preferences.
- 3 2 1 0 27. Perform installation accurately and completely, using available resources as needed.
- Select appropriate installation options (e.g., default, customized).

- b. Configure software to appropriate operating system settings.
 - c. Configure macros, tools, and packages to accomplish simple organizational and personal tasks.
 - d. Differentiate between procedures for an upgrade and for a new installation.
 - e. Differentiate between stand-alone and network installation procedures.
 - f. Disable/uninstall software that may interfere with installation of new software.
 - g. Install given application/system software on various platforms in accordance with manufacturer's procedures.
 - h. Convert data files if required.
 - i. Verify software installation and operation.
- 3 2 1 0 28. Resolve problems with installation if they occur.
- a. Access needed help using manufacturers' technical help lines or Internet sites.
 - b. Formulate new installation procedure if needed.
 - c. Troubleshoot unexpected results.
 - d. Set short- and long-term goals for assigned areas of responsibility/accountability.
- 3 2 1 0 29. Test and maintain products / services.
- a. Test products for reliability.
 - b. Initiate predictive maintenance procedures.
- 3 2 1 0 30. Troubleshoot computer-driven equipment and machines and access support as needed
- a. Test system using diagnostic tools/software.
- b. Repair/replace malfunctioning hardware.
 - c. Reinstall software as needed.
 - d. Recover data and/or files.
 - e. Restore system to normal operating standards.
- 3 2 1 0 31. Understand and employ design and color principles.
- a. Assess the impact of various color harmonies on a two-dimensional picture plan.
 - b. Demonstrate knowledge of the two-dimensional picture plan.
 - c. Demonstrate knowledge of the nature of color and color harmonies.
 - d. Assess how color affects the principles of line, value, shape and form.
 - e. Demonstrate knowledge of the principles and elements of design and their relationship to each other.
- 3 2 1 0 32. Understand data communications trends and issues.
- a. Identify major current issues in data communications.
 - b. Identify data communication trends.
 - c. Demonstrate knowledge of data transmission codes and protocols.
- 3 2 1 0 33. Understand elements and types of information processing.
- a. Identify the elements of the information processing cycle (i.e., input, process, output, and storage).
 - b. Identify types of processing (e.g., batch, interactive, event-driven, object-oriented).
- 3 2 1 0 34. Understand functions and interactions of departments within a business.
- a. Identify the ways in which
- organizational functions are interdependent.
- b. Define the role of strategic planning in business.
 - c. Identify types of communication channels (e.g., formal, informal).
 - d. Demonstrate knowledge of the components of a business plan.
- 3 2 1 0 35. Understand how bandwidth affects data transmission and on-screen image.
- a. Demonstrate knowledge of how bandwidths affect data transmission and on-screen image.
- 3 2 1 0 36. Understand how data is organized in software development.
- a. Demonstrate knowledge of how data is organized in software development.
- 3 2 1 0 37. Understand information organization principles.
- a. Demonstrate knowledge of group support technology for common knowledge requirements.
 - b. Demonstrate knowledge of methods for achieving productivity in knowledge work.
 - c. Demonstrate knowledge of the information analysis process.
 - d. Demonstrate knowledge of information technology solutions.
- 3 2 1 0 38. Understand product/service design.
- a. Consider customer satisfaction in determining product characteristics (e.g., usefulness, price, operation, life, reliability, safety, cost of operation).
 - b. Design product (e.g., using brainstorming, thumbnail sketches, rendering).
- 3 2 1 0 39. Understand the differences between a client and a server.
- a. Differentiate between a client and a

- server.
- 3 2 1 0 40. Understand the fundamentals of operating systems.
 - a. Identify major operating system fundamentals and components.
- 3 2 1 0 41. Understand the range of languages used in software development.
 - a. Demonstrate knowledge of the range of languages used in software development.
- 3 2 1 0 42. Understand types and functions of businesses.
 - a. Define stakeholder relationships (e.g., customers, employees, shareholders, and suppliers).
 - b. Identify business reporting and information flow.
 - c. Identify types of business organizations and functions.
- 3 2 1 0 43. Use available reference tools as appropriate.
 - a. Access needed information using appropriate reference materials.
 - b. Access needed information using company and manufacturers' references (e.g., procedural manuals, documentation, standards, work flowcharts).
- 3 2 1 0 44. Use installation and operation manuals.
 - a. Access needed information using appropriate reference materials.
- 3 2 1 0 45. Use reliability factors effectively to plan for and create products/services.
 - a. Consider reliability factors (e.g., cost, human, productivity).
 - b. Achieve reliability through maintainability, good design, design simplification, and design redundancy.
 - c. Recognize the relationship of maintainability and reliability.
 - d. Align cost components with quality

- objectives.
- e. Classify quality costs (e.g., preventive, evaluation, pre-delivery failures, post-delivery failures).

TECHNICAL LEVEL COURSES

10006 Telecommunications

- 3 2 1 0 1. Identify physical requirements for system Implementation
- 3 2 1 0 2. Identify system requirements for various types of installations.
- 3 2 1 0 3. Identify time, technology, and resource constraints.
- 3 2 1 0 4. Determine necessary user applications (e.g. web access, email).
- 3 2 1 0 5. Evaluate installation requirements
- 3 2 1 0 6. Resolve conflicting requirements
- 3 2 1 0 7. Analyze facilities' bandwidth requirements
- 3 2 1 0 8. Demonstrate knowledge of how to use software methodologies to analyze a real-world problem.
- 3 2 1 0 9. Analyze facilities' capacity planning (power cable/wire conduit).
- 3 2 1 0 10. Evaluate the potential effect of emerging technologies on information system software/hardware.
- 3 2 1 0 11. Identify Structural capacities and Electrical wiring codes.
- 3 2 1 0 12. Demonstrate knowledge of the characteristics and uses of network components (e.g., hub, switches, routers, firewall).
- 3 2 1 0 13. Differentiate processes, services, and protocols

- 3 2 1 0 14. Demonstrate knowledge of characteristics of connection-oriented and connectionless networks.
- 3 2 1 0 15. Demonstrate knowledge of packet-switching techniques
- 3 2 1 0 16. Differentiate between LANs, and WANs
- 3 2 1 0 17. Differentiate between point-to-point and point-to- multipoint network topologies
- 3 2 1 0 18. Identify basic physical and logical topologies (e.g. star, ring, bus)
- 13 2 1 0 19. Identify emerging networks
- 3 2 1 0 20. Demonstrate knowledge of the principles and operation of wire (coaxial, fiber optics, analog, & digital circuits).
- 3 2 1 0 21. Demonstrate knowledge of the principles and operation of wire (coaxial, fiber optics, etc.) and wireless systems.
- 3 2 1 0 22. Demonstrate knowledge of the TCP/IP protocol suite.
- 3 2 1 0 23. Configure a Virtual Private Network (VPN) to form the infrastructure of the WAN.

10251 Computer Technology

- 2 1 0 1. Identify support needs
- 3 2 1 0 2. Apply information and data analysis techniques
- 3 2 1 0 3. Identify skill level needs and available resources.
- 3 2 1 0 4. Define scope of work to meet customer needs.
- 3 2 1 0 5. Identify resources.
- 3 2 1 0 6. Evaluate present data and system configuration.
- 3 2 1 0 7. Formulate a support plan/confirm plan with client.
- 3 2 1 0 8. Respond to user questions

- 3 2 1 0 9. Provide troubleshooting for hardware/software.
- 3 2 1 0 10. Diagnose problems within system.
- 3 2 1 0 11. Perform technical functions required by customer/user.
- 3 2 1 0 12. Employ appropriate hardware and software tools to perform task in the most cost-effective manner.
- 3 2 1 0 13. Maintain timeliness and professionalism during interaction.
- 3 2 1 0 14. Communicate and document technical support provided.
- 3 2 1 0 15. When appropriate, follows up support session for evaluation.
- 3 2 1 0 16. Employs evaluative tools (software/recordings) to check work.
- 3 2 1 0 17. Understands steps to take to create improvement plan when needed.
- 3 2 1 0 18. Analyze Symptoms of problem and use diagnostic skills.
- 3 2 1 0 19. Employ effective problem-solving skills in performing support, maintenance and/or repair.
- 3 2 1 0 20. Perform work flow analysis to determine user needs.
- 3 2 1 0 21. Evaluate appropriateness of software for specific projects.
- 3 2 1 0 22. Document results of the software evaluation.
- 3 2 1 0 23. Perform a software configuration audit.
- 3 2 1 0 24. Perform a physical configuration audit.
- 3 2 1 0 25. Develop a method for evaluation.
- 3 2 1 0 26. Test the functionality of proposed software configuration.
- 3 2 1 0 27. Demonstrate knowledge of the CPU (Intel, AMD, etc) & sockets.
- 3 2 1 0 28. Demonstrate knowledge of INPUT devices (keyboard, mouse, touchpad, cameras, scanners, midis, barcode scanners, etc).

- 3 2 1 0 29. Demonstrate knowledge of OUTPUT devices (printers, CRTs, LCD monitors, network devices).
- 3 2 1 0 30. Demonstrate knowledge of PDAs and Phones and how they connect to and share data with computers.
- 3 2 1 0 31. Demonstrate knowledge of power and power supplies and how associated problems can be solved.
- 3 2 1 0 32. Demonstrate knowledge of peculiar features and problems of notebooks, PDAs and other portable devices.
- 3 2 1 0 33. Demonstrate knowledge of motherboard/CPU (North/Southbridge, L1/L2, multi-core, bus, 32/64 bit, form-factor, slots, etc).
- 3 2 1 0 34. Demonstrate knowledge of Chipsets/BIOS and their drivers.
- 3 2 1 0 35. Demonstrate knowledge of memory modules (RIMM, Dimm, SDRAM, DDR, DDR2, etc.).
- 3 2 1 0 36. Demonstrate knowledge of hard drive technologies (IDE, EIDE, SATA, SCSI, etc.)
- 3 2 1 0 37. Demonstrate knowledge of video cards and slots (VGA, XVGA, VESA, SLI, etc).
- 3 2 1 0 38. Demonstrate knowledge of I/O ports (serial, parallel, USB, PS/2, Firewire, etc).
- 3 2 1 0 39. Demonstrate knowledge of modem/NIC ports and troubleshooting their problems.
- 3 2 1 0 40. Explain the purpose of computer components and how they work together as a system.
- 3 2 1 0 41. Identify primary PC components and the functions of each.

10253 Information Support & Services

- 2 1 0 1. Apply information and data analysis techniques.
- 3 2 1 0 2. Define scope of work to meet customer needs.
- 3 2 1 0 3. Evaluate present data and system configuration.
- 2 1 0 4. Formulate a support plan/confirm plan with client.
- 3 2 1 0 5. Identify resources.
- 3 2 1 0 6. Identify skill level needs and available resources.
- 3 2 1 0 7. Identify support needs.
- 3 2 1 0 8. Communicate and document technical support provided.
- 3 2 1 0 9. Diagnose problems within system.
- 3 2 1 0 10. Employ appropriate hardware and software tools to perform task in the most cost-effective manner.
- 3 2 1 0 11. Maintain timeliness and professionalism during interaction.
- 3 2 1 0 12. Perform technical functions required by customer/user.
- 3 2 1 0 13. Provide troubleshooting for hardware/software.
- 3 2 1 0 14. Respond to user questions.
- 3 2 1 0 15. Employs evaluative tools (software/recordings) to check work.
- 3 2 1 0 16. Understands steps to take to create improvement plan when needed.
- 3 2 1 0 17. When appropriate, follows up support session for evaluation.

10255 CISCO- Network Infrastructure Essentials

- 3 2 1 0 1. Identify physical requirements for system implementation.
- 3 2 1 0 2. Identify system requirements for various types of installations
- 3 2 1 0 3. Analyze existing procedures
- 3 2 1 0 4. Evaluate installation requirements
- 3 2 1 0 5. Resolve conflicting requirements.
- 3 2 1 0 6. Analyze facilities' bandwidth requirements.
- 3 2 1 0 7. Identify site and system constraints
- 3 2 1 0 8. Analyze facilities' capacity planning (power cable/wire conduit).
- 3 2 1 0 9. Demonstrate knowledge of various frame types and formats.
- 3 2 1 0 10. Describe common VoIP protocols, including Session Initiation Protocol (SIP), H.323, and Megaco/H.248.
- 3 2 1 0 11. Demonstrate knowledge of the open system interconnection (OSI) standard (ISO Standard 7498).
- 3 2 1 0 12. Demonstrate knowledge of the TCP/IP protocol suite.
- 3 2 1 0 13. Identify standard high-speed networks (e.g., broadband, ISDN, SMDS, ATM, FDDI).
- 3 2 1 0 14. Demonstrate knowledge of the role that routers, firewalls, intrusion detection systems, and VPNs play in security.
- 3 2 1 0 15. Perform remote monitoring.
- 3 2 1 0 16. Recognize security problems.
- 3 2 1 0 17. Recognize system alerts.
- 3 2 1 0 18. Document network system malfunction(s).
- 3 2 1 0 19. Fix recoverable problems.
- 3 2 1 0 20. Respond to system messages.
- 3 2 1 0 21. Run diagnostics
- 3 2 1 0 22. Identify CISCO router products.
- 3 2 1 0 23. Install CISCO router products.

12/7/2015

- 3 2 1 0 24. Isolate system faults in various types of networks, cables, data modems, and carrier systems.

10299 Information Support & Services - Other

Coursework should represent explicit objectives measured against specific target employment skills that are not available in other courses and should be enumerated in addition to those listed below.

- 3 2 1 0 1. Employ effective listening skills when working with client.
- 3 2 1 0 2. Employ customer service principles when working with consumers.
- 3 2 1 0 3. Evaluate and follow-up on customer service provided.

Additional competencies should reflect the particular work environment and the essential skills addressed reflective of previous coursework.

10051 Information Management

- 3 2 1 0 1. Conduct a preliminary investigation.
- 2 1 0 2. Define the scope of the systems project.
- 3 2 1 0 3. Identify the phases in a system project.
- 3 2 1 0 4. Select basic fact-gathering techniques to be used.
- 3 2 1 0 5. Design a framework for evaluating individual applications.
- 3 2 1 0 6. Design a framework for evaluating information system functions.
- 3 2 1 0 7. Recommend new features or enhancements to existing tools.
- 3 2 1 0 8. Research the concept of information system life cycles.
- 3 2 1 0 9. Define/Prioritize communication needs.

- 3 2 1 0 10. Determine the size and specifics of the work to be completed.
- 3 2 1 0 11. Estimate time, materials, and capabilities needed to complete assignment.
- 3 2 1 0 12. Evaluate strengths and weaknesses of completed project.
- 3 2 1 0 13. Specify project objectives.
- 3 2 1 0 14. Conduct interviews with selected human information sources.
- 3 2 1 0 15. Define research questions.
- 3 2 1 0 16. Determine priorities for the information that should be gathered.
- 3 2 1 0 17. Evaluate potential sources of information based on established criteria (e.g., affordability, relevance).
- 3 2 1 0 18. Identify potential sources of information.
- 3 2 1 0 19. Identify subject-matter experts.
- 3 2 1 0 20. Identify target audience.
- 3 2 1 0 21. Target audience/user group as a key information source.
- 3 2 1 0 22. Access needed information using standard references and sources.
- 3 2 1 0 23. Analyze data.
- 3 2 1 0 24. Compile relevant data.
- 2 1 0 25. Determine audience.
- 3 2 1 0 26. Draft report.
- 3 2 1 0 27. Draw conclusions from data analysis.
- 3 2 1 0 28. Edit report (e.g., check spelling, grammar, punctuation, sentence structure, accuracy of content)
- 3 2 1 0 29. Identify type of report needed.
- 3 2 1 0 30. Organize data into charts & graphs.
- 3 2 1 0 31. Outline report.
- 3 2 1 0 32. Present reports.
- 3 2 1 0 33. Proofread revised report.
- 3 2 1 0 34. Review report with peers.
- 3 2 1 0 35. Revise report as needed based on peer feedback.

10252 Computer Maintenance

- 3 2 1 0 1. Diagnose problems within system.
- 2 1 0 2. Test the functionality of proposed software configuration.
- 2 1 0 3. Demonstrate knowledge of Chipsets/BIOS and their drivers.
- 3 2 1 0 4. Demonstrate knowledge of motherboard/CPU (North/Southbridge, L1/L2, multi-core, bus, 32/64 bit, form-factor, slots, etc).
- 3 2 1 0 5. Demonstrate knowledge of the CPU (Intel, AMD, etc) and sockets.
- 3 2 1 0 6. Connect peripherals and expansion cards to/in mainboard.
- 3 2 1 0 7. Demonstrate knowledge of error messages and symptoms of hardware failures.
- 3 2 1 0 8. Install hard drives (HDD, FDD, CD, CDR) both EIDE and SATA.
- 3 2 1 0 9. Install mainboard (with memory/CPU).
- 3 2 1 0 10. Transfer system settings and files from old system to new.
- 3 2 1 0 11. Differentiate between hardware and software failure.
- 3 2 1 0 12. Identify problems in the operating system and related hardware.
- 3 2 1 0 13. Reinstall software as needed.
- 3 2 1 0 14. Repair/replace malfunctioning hardware.
- 3 2 1 0 15. Test system using diagnostic tools/software.
- 3 2 1 0 16. Connect stations to peripheral devices, especially printers.
- 3 2 1 0 17. Install new hardware (drives, cards, etc) on O/S.
- 3 2 1 0 18. Protect stations from viruses, malwares, adwares, security breaches, etc.
- 3 2 1 0 19. Recover from system errors.
- 3 2 1 0 20. Test integrity and drivers of all devices recognized by O/S.

12/7/2015

- 3 2 1 0 21. Upgrade from one generation of O/S to the next.
- 2 1 0 22. Demonstrate knowledge of the characteristics and uses of network components (e.g., hub, switches, routers, firewall).
- 3 2 1 0 23. Implement recovery procedures as needed. Minimize impact of problems on productivity (e.g., minimize downtime).
- 3 2 1 0 24. Document performance problems.
- 3 2 1 0 25. Participate in the evaluation, analysis, and recommendation of technical computing products.

10254 IT Essentials: PC Hardware & Software

- 3 2 1 0 1. Identify how the four components of a network operating system (i.e., server platform, network services software, network redirection software,
- 3 2 1 0 2. Select a LAN/WAN technology that meets defined set of requirements.
- 3 2 1 0 3. Demonstrate knowledge of the principles and operation of fiber optics, analog and digital circuits.
- 3 2 1 0 4. Demonstrate knowledge of the principles and operation of wire (coaxial, fiber optics, etc.) and wireless systems.
- 3 2 1 0 5. Demonstrate knowledge of the open system interconnection (OSI) standard (ISO Standard 7498).
- 3 2 1 0 6. Demonstrate knowledge about the difference between stand-alone, peer-to-peer and client-server networks and software.
- 3 2 1 0 7. Demonstrate knowledge of network operating systems (i.e., Windows XP, LINUX, UNIX, etc.).

- 3 2 1 0 8. Demonstrate knowledge of the general characteristics of network operating systems.
- 3 2 1 0 9. Add capability to a software system by recording macros and storing them in the system's library.
- 3 2 1 0 10. Assemble necessary components to complement information system design.
- 3 2 1 0 11. Configure software appropriately for system and user application.
- 3 2 1 0 12. Convert data between different software packages and between software and the OS version.
- 3 2 1 0 13. Customize a general-purpose software package (e.g., DBMS) to provide specific functionality beyond the default setting.
- 3 2 1 0 14. Import/Export data between different software packages.
- 3 2 1 0 15. Install LAN Management software.
- 3 2 1 0 16. Load software with minimum disruption of process flow.
- 3 2 1 0 17. Resolve compatibility issues.
- 3 2 1 0 18. Demonstrate knowledge of hard drive setup and troubleshooting.
- 13 2 1 0 19. Demonstrate knowledge of hard drive technologies (IDE, EIDE, SATA, SCSI, etc).
- 3 2 1 0 20. Configure hardware system.
- 2 1 0 21. Demonstrate knowledge of how hardware components interact and how conflicts arise.
- 3 2 1 0 22. Employ appropriate safety precautions when working with PC.
- 2 1 0 23. Install mainboard (with memory/CPU).
- 3 2 1 0 24. Restore system and configuration.
- 3 2 1 0 25. Demonstrate hard drive maintenance procedures (defrag/scan (2) clear caches, etc).
- 3 2 1 0 26. Differentiate between hardware and software failure.
- 3 2 1 0 27. Identify problems in the operating system and related hardware.

- 3 2 1 0 28. Update flash memory (BIOS).
- 3 2 1 0 29. Demonstrate knowledge of how to turn LANs into MANs and WANs.
- 3 2 1 0 30. Differentiate between LANs, MANs and WANs.
- 3 2 1 0 31. Identify the basic broadcast topologies (e.g., star ring, bus).
- 3 2 1 0 32. Identify the basic point-to-point network topologies (e.g., star, ring, tree, network, irregular).
- 3 2 1 0 33. Interpret basic networking terminology.

10256 Particular Topics in Information Support

Coursework should represent explicit objectives measured against specific target employment skills that are not available in other courses and should be enumerated in addition to those listed below.

Possible topics (you will have others): Personal Communications Security Military and Governmental Standards for Access Support Desk Data Collection Tools

- 3 2 1 0 1. Employ effective listening skills when working with client.
- 3 2 1 0 2. Employ customer service principles when working with consumers.
- 3 2 1 0 3. Evaluate and follow-up on customer service provided.

Additional competencies should reflect the particular work environment and the essential skills addressed reflective of previous coursework.

10053 Database Applications

- 3 2 1 0 1. Develop programs using appropriate language.
- 3 2 1 0 2. Use user interface development tools.
- 3 2 1 0 3. Identify the use of program design tools in a software development process.
- 3 2 1 0 4. Demonstrate knowledge of how a programming language can support multitasking and exception- handling.
- 3 2 1 0 5. Demonstrate knowledge of the basic principles for analyzing a programming language.
- 3 2 1 0 6. Demonstrate knowledge of the basics of structured, object-oriented language.
- 3 2 1 0 7. Demonstrate knowledge of the concepts of data and procedural representations.
- 3 2 1 0 8. Demonstrate knowledge of current key programming languages and the environment they are used in.
- 3 2 1 0 9 Demonstrate knowledge of key constructs and commands specific to a language.
- 3 2 1 0 10. Translate data structure and program design into code in an appropriate language.
- 3 2 1 0 11. Demonstrate knowledge of how programming control structures are used to verify correctness.
- 3 2 1 0 12. Demonstrate knowledge of how to design and implement programs in a top-down manner.
- 3 2 1 0 13. Demonstrate knowledge of structured/modular programming.
- 3 2 1 0 14. Divide design specifications into logical process blocks.
- 3 2 1 0 15. Follow specifications or drawings.
- 3 2 1 0 16. Identify parameters.
- 3 2 1 0 17. Create a database from model specifications using both program code

- and Graphic User Interface (GUI) processes when provided by the database
- 3 2 1 0 18. Perform standard maintenance on the database.
- 3 2 1 0 19. Release software and documentation updates according to procedures.
- 3 2 1 0 20. Develop scripts and forms that permit access via websites to the database.
- 3 2 1 0 21. Identify and analyze potential security problems for web access to the database.
- 3 2 1 0 22. Implement solutions in code and documentation.
- 3 2 1 0 23. Propose security solutions to web-based security problems.

10054 Data Systems / Processing

- 3 2 1 0 1. Demonstrate knowledge of hard drive technologies (IDE, EIDE, SATA, SCSI, etc).
- 3 2 1 0 2. Demonstrate knowledge of I/O ports (serial, parallel, USB, PS/2, Firewire, etc).
- 3 2 1 0 3. Demonstrate knowledge of INPUT devices (keyboard, mouse, touchpad, cameras, scanners, midis, barcode scanners, etc).
- 3 2 1 0 4. Demonstrate knowledge of OUTPUT devices (printers, CRTs, LCD monitors, network devices).
- 3 2 1 0 5. Demonstrate knowledge of how a programming language can support multitasking and exception- handling.
- 3 2 1 0 6. Demonstrate knowledge of the basic principles for analyzing a programming language.
- 3 2 1 0 7. Demonstrate knowledge of the basics of structured, object-oriented language.
- 3 2 1 0 8. Demonstrate knowledge of the concepts of data and procedural representations.

- 3 2 1 0 9. Demonstrate knowledge of the hardware-software connections.
- 3 2 1 0 10. Demonstrate knowledge of current key programming languages and the environment they are used in.
- 3 2 1 0 11. Demonstrate knowledge of key constructs and commands specific to a language.
- 3 2 1 0 12. Translate data structure and program design into code in an appropriate language.
- 3 2 1 0 13. Demonstrate knowledge of the range of languages used in software development.
- 3 2 1 0 14. Analyze and prepare logic using at least one alternative to flowcharting such as pseudo coding.
- 3 2 1 0 15. Analyze and prepare logic using program flowchart.
- 3 2 1 0 16. Compile and debug code.
- 3 2 1 0 17. Conduct unit testing and bug fixes.
- 3 2 1 0 18. Prepare code documentation.
- 3 2 1 0 19. Prepare unit testing plan.
- 3 2 1 0 20. Review design (e.g., peer and/or user walkthrough).
- 3 2 1 0 21. Use appropriate programming language.

APPLICATION LEVEL COURSES

10298 Info Support & Services – Workplace Experience

- 3 2 1 0 1. Employ effective listening skills when working with client.

- 3 2 1 0 2. Employ customer service principles when working with consumers.
- 3 2 1 0 3. Evaluate and follow-up on customer service provided.

Additional competencies should reflect the particular work environment and the essential skills addressed reflective of previous coursework.

10052 Database Management & Data Warehousing

- 3 2 1 0 1. Analyze and normalize the developed database model looking for and resolving potential problems.
- 3 2 1 0 2. Analyze the security needs for the database.
- 3 2 1 0 3. Apply information and data analysis specifications to create a database model using techniques such as (e.g. -Entity Relationship Diagramming).
- 3 2 1 0 4. Identify appropriate database type based on customer requirements, availability of software and hardware resources, and distribution
- 3 2 1 0 5. Communicate and document technical support provided.
- 3 2 1 0 6. Perform database queries to analyze database functionality and diagnose problems.
- 3 2 1 0 7. Perform database troubleshooting and system-tuning functions.
- 3 2 1 0 8. Perform standard maintenance on the database.
- 3 2 1 0 9. Perform technical functions required by customer/user.
- 3 2 1 0 10. Populate the database created with test data.

- 3 2 1 0 11. Verify that all possible security safeguards are in place.

10055 Particular Topics in Management Information Systems

Coursework should represent explicit objectives measured against specific target employment skills that are not available in other courses and should be enumerated in addition to those listed below.

Possible topics (you will have others): Security in Cross Network Environments Managing Data Backup and Encryption across Cloud Military and Governmental Standards for Access

- 3 2 1 0 1. Employ effective listening skills when working with client.
- 3 2 1 0 2. Employ customer service principles when working with consumers.
- 3 2 1 0 3. Evaluate and follow-up on customer service provided.

Additional competencies should reflect the particular work environment and the essential skills addressed reflective of previous coursework.

10098 Management Information Systems – Workplace Experience

- 3 2 1 0 1. Employ effective listening skills when working with client.
- 3 2 1 0 2. Employ customer service principles when working with consumers.
- 3 2 1 0 3. Evaluate and follow-up on customer service provided.

Additional competencies should reflect the particular work environment and the essential skills addressed reflective of previous coursework.

10099 Management Information System – Other

Coursework should represent explicit objectives measured against specific target employment skills that are not available in other courses and should be enumerated in addition to those listed below.

- 3 2 1 0 1. Employ effective listening skills when working with client.
- 3 2 1 0 2. Employ customer service principles when working with consumers.
- 3 2 1 0 3. Evaluate and follow-up on customer service provided.

Additional competencies should reflect the particular work environment and the essential skills addressed reflective of previous coursework.

10260 Educational Trainer

- 3 2 1 0 1. Identify support needs.
- 3 2 1 0 2. Identify skill level needs and available resources.
- 3 2 1 0 3. Define scope of work to meet customer needs.
- 3 2 1 0 4. Identify resources.
- 3 2 1 0 5. Formulate a support plan/confirm plan with client.
- 3 2 1 0 6. Respond to user questions.

- 3 2 1 0 7. Maintain timeliness and professionalism during interaction.
- 3 2 1 0 8. When appropriate, follows up support session for evaluation.
- 3 2 1 0 9. Understands steps to take to create improvement plan when needed.
- 3 2 1 0 10. Provide troubleshooting for hardware/software.
- 3 2 1 0 11. Diagnose problems within system.
- 3 2 1 0 12. Perform technical functions required by customer/user.
- 3 2 1 0 13. Employ appropriate hardware and software tools to perform task in the most cost- effective manner.
- 3 2 1 0 14. Communicate and document technical support provided.
- 3 2 1 0 15. Operate help desk.
- 3 2 1 0 16. Employ desktop productivity tools.
- 3 2 1 0 17. Support computer users
- 3 2 1 0 18. Train computer users.
- 3 2 1 0 19. Determine customers' individual needs.
- 3 2 1 0 20. Project a professional business image (e.g. appearance, voice, grammar, word usage, enunciation, nonverbal communication).
- 3 2 1 0 21. Interact with customers and colleagues in a professional manner (e.g., prompt, friendly, courteous, respectful, helpful, knowledgeable, understandable).
- 3 2 1 0 22. Ensure that your assistance promotes the best interests of the company.
- 3 2 1 0 23. Create calendars / schedules.
- 3 2 1 0 24. Maintain appointment calendars.
- 3 2 1 0 25. Process requests for appointments.
- 3 2 1 0 26. Verify appointments.
- 3 2 1 0 27. Notify customers of changes in schedule.
- 3 2 1 0 28. Manage scheduling conflicts.
- 3 2 1 0 29. Document results.

- 3 2 1 0 30. Define/prioritize communication needs.
- 3 2 1 0 31. Specify project objectives.
- 3 2 1 0 32. Determine the size and specifics of the work to be completed.
- 3 2 1 0 33. Estimate time, materials, and capabilities needed to complete assignment.
- 3 2 1 0 34. Evaluate strengths and weaknesses of completed project.
- 3 2 1 0 35. Demonstrates ability to work and communicate effectively with diverse audiences.
- 3 2 1 0 36. Exercises flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal.
- 3 2 1 0 37. Assumes shared responsibility for collaborative work.
- 3 2 1 0 38. Works appropriately and productively with others
- 3 2 1 0 39. Leverages the collective intelligence of groups when appropriate; and
- 3 2 1 0 40. Bridges cultural difference and uses differing perspective to increase innovation and the quality of work.
- 3 2 1 0 41. Demonstrates integrity and ethical behavior.
- 3 2 1 0 42. Acts responsibly with the interests of the larger community in mind (civic awareness & responsibility).
- 3 2 1 0 43. Uses interpersonal and problem-solving skills to influence and guide others toward a goal.
- 3 2 1 0 44. Leverages strengths of others to accomplish a common goal.

21205 Project Management and Resource Scheduling

- 3 2 1 0 1. Recognize different resource types (Work, Material, Cost, Budget, Personnel/Skills, Generic, etc)
- 3 2 1 0 2. Understand the concept of scope and demonstrate in context of assessing the size of a project.
- 3 2 1 0 3. Develop plans for project management and resource scheduling.
- 3 2 1 0 4. Identify key personnel and responsibilities for project.
- 3 2 1 0 5. Develop SWOT analysis [Strengths, Weaknesses, Opportunities, and Threats] for project.
- 3 2 1 0 6. Analyze workload of tasks and projects.
- 3 2 1 0 7. Determine required personnel groups and management hierarchy.
- 3 2 1 0 8. Determine resources necessary for project completion.
- 3 2 1 0 9. Determine essential tasks necessary for project completion.
- 3 2 1 0 10. Design potential timelines for assignments.
- 3 2 1 0 11. Explore appropriate technologies for project management and resource scheduling.
- 3 2 1 0 12. Create and present a project management and resource scheduling plan.
- 3 2 1 0 13. Create Gantt charts.
- 3 2 1 0 14. Evaluate and assign resources to tasks.
- 3 2 1 0 15. Implement project management skills to design and complete a collaborative project.
- 3 2 1 0 16. Learn various survey strategies to track project progress.
- 3 2 1 0 17. Develop strategies for monitoring interconnected assignments.
- 3 2 1 0 18. Survey strategies for critical path scheduling.
- 3 2 1 0 19. Create strategies to manage project budgets.
- 3 2 1 0 20. Build survey analysis for customer satisfaction.