

INFORMATION TECHNOLOGY CAREER CLUSTER DESIGN

Network Systems Pathway – CIP Code 11.0901

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 Applications	10004/60004	1 credit

TECHNICAL LEVEL

Telecommunications	10006	1 credit
Network Technology	10101	1 credit
Networking Systems	10102	1 credit
Router Basics	10104	1 credit
NetWare Routing	10105	1 credit
Wide Area Telecommunications and Networking	10106	1 credit
Wireless Networking	10107	1 credit
Network Security	10108	1 credit
CISCO-Network Infrastructure Essentials	10255	1 credit
IT Essentials: PC Hardware & Software	10254	1 credit

APPLICATION LEVEL

Essentials of Network Operating Sys.	10109	1 credit
Microsoft Certified Professional	10110	1 credit
Particular Topics in Networking Sys.	10111	1 credit
Networking Systems - Workplace Exp.	10148	1 credit
Networking Systems - Other.	10149	1 credit
Project Mgmt. & Res. Scheduling	21205	1 credit

KANSAS STATE CAREER CLUSTER COMPETENCY PROFILE
 NETWORK SYSTEMS PATHWAY (C.I.P. 11.0901)

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.
- 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.
- 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.

- a. Measure increases in productivity realized by the implementation of information systems.
- 3 2 1 0 14. Explain new and emerging classes of software.
- a. 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).
- a. 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.
- a. Distinguish between local area networks and wide area networks.
- 3 2 1 0 17. Explain the features and functions of web browsing software.
- a. Identify how different browsers affect the look of a web page.
- b. Demonstrate knowledge of the characteristics and uses of plug-ins.
- c. 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.
- a. 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.
- a. Demonstrate knowledge of the function and operation of compilers and interpreters.
- b. Demonstrate knowledge of widely used software applications (e.g., word processing, database management, spreadsheet development).
- c. Demonstrate knowledge of the key functions of systems software.
- 3 2 1 0 20. Explain the role of number systems in information systems.
- a. Identify the role the binary system in information systems.
- b. Demonstrate knowledge of number systems and internal data representation.
- 3 2 1 0 21. Gather information.
- a. Identify potential sources of information.
- b. Gather information from selected print and electronic sources.
- c. Conduct interviews with selected human information sources.
- d. Evaluate potential sources of information based on established criteria (e.g., affordability, relevance).
- e. Target audience/user group as a key information source.
- f. Determine priorities for the information that should be gathered.
- g. Identify subject-matter experts.
- 3 2 1 0 22. Identify computer classifications and hardware.
- a. Identify types of computer storage devices.
- b. Identify the hardware associated with telecommunications functions.
- c. Identify major hardware components and their functions.
- d. 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.
- a. Identify new technologies relevant to information technology.
- b. Assess the importance of new technologies to future developments & to future knowledge worker productivity.
- c. Identify new & emerging drivers and inhibitors of information technology change.
- 3 2 1 0 24. Monitor and adjust goals.
- a. Obtain support for goals.
- b. Provide support for goals.
- c. Monitor goal achievement.
- d. Adjust goals.
- 3 2 1 0 25. Operate computer-driven equipment and machines.
- a. Run applications/jobs in accordance with processing procedures.
- b. Secure needed supplies and resources.
- c. Interact with/respond to system messages using console device.
- d. Follow log-off and power-down procedure(s).
- e. Follow power-up and log-on procedures.
- 3 2 1 0 26. Perform customization as requested.
- a. Customize software to meet user preferences.
- 3 2 1 0 27. Perform installation accurately and completely, using available resources as needed.
- a. 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.

10101 Network Technology

- 3 2 1 0 1. Determine required service level.
- 3 2 1 0 2. Gather data to identify customer/stakeholder requirement.
- 3 2 1 0 3. Identify time, technology, and resource constraints.
- 3 2 1 0 4. Identify customer/stakeholders.
- 3 2 1 0 5. Identify environment requirements, conditions and limitations.
- 3 2 1 0 6. Identify hardware, networking, and software system functional requirements.
- 3 2 1 0 7. Identify input and output requirements.
- 3 2 1 0 8. Identify physical requirements for system implementation.
- 3 2 1 0 9. Identify system requirements for various types of installations.
- 3 2 1 0 10. Analyze existing procedures
- 3 2 1 0 11. Determine necessary user applications (e.g. web access, email).

- 3 2 1 0 12. Evaluate the potential effect of emerging technologies on information system software/hardware.
- 3 2 1 0 13. Gather information on system objectives from users
- 3 2 1 0 14. Identify power and power supplies
- 3 2 1 0 15. Identify Structural capacities and Electrical wiring codes
- 3 2 1 0 16. Perform workflow analysis to determine user needs
- 3 2 1 0 17. Define systems and software requirements.
- 3 2 1 0 18. Analyze facilities' bandwidth requirements.
- 3 2 1 0 19. Identify site and system constraints.
- 3 2 1 0 20. Identify security requirements and the need for data protection.
- 3 2 1 0 21. Demonstrate a basic knowledge of OSI modeling
- 3 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. Differentiate between a physical and logical topology.
- 3 2 1 0 24. Demonstrate knowledge of basic telephony (analog vs. digital signals).
- 3 2 1 0 25. Identify basic physical and logical topologies (e.g. star, ring, bus).
- 3 2 1 0 26. Identify emerging networks.
- 3 2 1 0 27. Identify how the four components of a network operating system (i.e., server platform, network services software, network redirection software,
- 3 2 1 0 28. Demonstrate knowledge of the reasons for installing a network.
- 3 2 1 0 29. Trace the evolution of networks.
- 3 2 1 0 30. Demonstrate knowledge of the principles and operation of fiber optics, analog and digital circuits.
- 3 2 1 0 31. Demonstrate knowledge of the principles and operation of wire (coaxial, fiber optics, etc.) and wireless systems
- 3 2 1 0 32. Demonstrate knowledge of the open system interconnection (OSI) standard (ISO Standard 7498).
- 3 2 1 0 33. Demonstrate knowledge of the open system interconnection (OSI) standard (ISO Standard 7498).
- 3 2 1 0 34. Demonstrate knowledge security requirements and the need for data protection
- 3 2 1 0 35. Demonstrate knowledge about the difference between stand-alone, peer-to-peer and client-server networks and software.
- 3 2 1 0 36. Demonstrate knowledge of the general characteristics of network operating systems.
- 3 2 1 0 37. Evaluate installation requirements
- 3 2 1 0 38. Identify differences between stand-alone and network applications / operating systems.
- 3 2 1 0 39. Develop a disaster recovery plan.
- 3 2 1 0 40. Differentiate between disaster recovery and business continuance.
- 3 2 1 0 41. Identify common backup devices.
- 3 2 1 0 42. Identify methods for avoiding common computer system disasters
- 3 2 1 0 43. Identify the criteria for selecting a backup system.
- 3 2 1 0 44. Identify the steps in a disaster recovery plan and a business resumption plan.
- 3 2 1 0 45. Identify skill level needs of support personnel.
- 3 2 1 0 46. Identify support requirements.
- 3 2 1 0 47. Identify battery backup equipment.
- 3 2 1 0 48. Identify the different types of backups (differential, complete, incremental).
- 3 2 1 0 49. Recognize the need for regular backup procedures.
- 3 2 1 0 50. Demonstrate knowledge of the basic elements of network maintenance.
- 3 2 1 0 51. Identify available diagnostic tools used for system maintenance.
- 3 2 1 0 52. Identify maintenance procedures and processes.
- 3 2 1 0 53. Demonstrate knowledge of basic troubleshooting steps.
- 3 2 1 0 54. Identify available diagnostic tools used for system maintenance

10102 Networking Systems

- 3 2 1 0 1. Clarify specifications using questioning techniques
- 3 2 1 0 2. Develop functional requirements/ specifications for high-level systems.
- 3 2 1 0 3. Gather data to identify customer/stakeholder requirement.
- 3 2 1 0 4. Gather information using interviewing strategies
- 3 2 1 0 5. Identify new application requirements within the system
- 3 2 1 0 6. Identify security requirements
- 3 2 1 0 7. Access needed information using company and manufacturers' references (e.g., procedural manuals, documentation, standards, work flowcharts).
- 3 2 1 0 8. Demonstrate knowledge of the use, structure, and contents of a requirements specification document
- 3 2 1 0 9. Develop formal specifications
- 3 2 1 0 10. Review and verify specifications with customer
- 3 2 1 0 11. Demonstrate knowledge of how to use software methodologies to analyze a real-world problem.
- 3 2 1 0 12. Analyze facilities' capacity planning (power cable/wire conduit).

- 3 2 1 0 13. Define power conversion
- 3 2 1 0 14. Develop security plan.
- 3 2 1 0 15. Identify specific access levels that need to be accommodated.
- 3 2 1 0 16. Match security system design to identified security requirements
- 3 2 1 0 17. Demonstrate a basic knowledge of OSI modeling.
- 3 2 1 0 18. Demonstrate knowledge of LAN transmission methods and standards
- 3 2 1 0 19. Demonstrate knowledge of LAN transmission protocols
- 3 2 1 0 20. Differentiate processes, services, & protocols.
- 3 2 1 0 21. Demonstrate knowledge of electronic communications (e.g., LAN, Internet, remote database access, EDI).
- 3 2 1 0 22. Select a LAN/WAN technology that meets defined set of requirements
- 3 2 1 0 23. Analyze current trends and development in LANs
- 3 2 1 0 24. Demonstrate knowledge of local-area network (LAN) trends and issues
- 3 2 1 0 25. Demonstrate knowledge of the principles and operation of fiber optics, analog and digital circuits.
- 3 2 1 0 26. Demonstrate knowledge of the principles and operation of wire (coaxial, fiber optics, etc.) and wireless systems
- 3 2 1 0 27. Configure a Virtual Private Network (VPN) to form the infrastructure of the WAN
- 3 2 1 0 28. Demonstrate knowledge of firewall implementation between trusted network and WAN.
- 3 2 1 0 29. Demonstrate knowledge of interconnecting LANs using WAN services
- 3 2 1 0 30. Demonstrate knowledge of the conversion of analog speech to digital.
- 3 2 1 0 31. Demonstrate knowledge of the role that routers, firewalls, intrusion detection systems, and VPNs play in security.
- 3 2 1 0 32. Ensure that all multi-user aspects of the application function are operational
- 3 2 1 0 33. Install appropriate operating system hardware and software and peripherals.
- 3 2 1 0 34. Install information system application programs in accordance with requirements.
- 3 2 1 0 35. Install structured cabling
- 3 2 1 0 36. Assemble necessary components to complement information system design.
- 3 2 1 0 37. Load software with minimum disruption of process flow.
- 3 2 1 0 38. Resolve compatibility issues.
- 3 2 1 0 39. Create a baseline of system/network performance.
- 3 2 1 0 40. Identify abnormal system performance.
- 3 2 1 0 41. Recognize environmental problems.
- 3 2 1 0 42. Backup system
- 3 2 1 0 43. Develop a disaster recovery plan.
- 3 2 1 0 44. Restore system.
- 3 2 1 0 45. Choose and implement an appropriate routing protocol.
- 3 2 1 0 45. Identify principles governing software acquisition and upgrades.
- 3 2 1 0 46. Define scope of work to meet customer needs.
- 3 2 1 0 47. Formulate a support plan.
- 3 2 1 0 48. Communicate and document technical support provided.
- 3 2 1 0 49. Respond to user questions.
- 3 2 1 0 50. Analyze operational problems.
- 3 2 1 0 51. Install and configure Internet software packages.
- 3 2 1 0 52. Upgrade network system software.
- 3 2 1 0 53. Develop backup process
- 3 2 1 0 54. Install surge suppression protection.
- 3 2 1 0 55. Evaluate maintenance processes and outcomes.
- 3 2 1 0 56. Fix recoverable problems
- 3 2 1 0 57. Identify problems using diagnostic tools.
- 3 2 1 0 58. Implement selected solution.
- 3 2 1 0 59. Minimize impact of problems on productivity (e.g. minimize downtime)
- 3 2 1 0 60. Run diagnostics
- 3 2 1 0 61. Select most appropriate solution
- 3 2 1 0 62. Develop resolution plan.
- 3 2 1 0 63. Document results and solutions
- 3 2 1 0 64. Identify problems using diagnostic tools.
- 3 2 1 0 65. Perform appropriate analysis to identify problem cause
- 3 2 1 0 66. Test identified solutions.
- 3 2 1 0 67. Isolate system faults in various types of networks, cables, data modems, and carrier systems.

10104 Router Basics

- 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. 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 12. Identify standard high-speed networks (e.g., broadband, ISDN, SMDS, ATM, FDDI).
- 3 2 1 0 13. Demonstrate knowledge of the role that routers, firewalls, intrusion detection systems, and VPNs play in security.
- 3 2 1 0 14. Perform remote monitoring.
- 3 2 1 0 15. Recognize security problems.
- 3 2 1 0 16. Recognize system alerts.
- 3 2 1 0 17. Document network system malfunction(s).
- 3 2 1 0 18. Fix recoverable problems.
- 3 2 1 0 19. Respond to system messages.
- 3 2 1 0 20. Run diagnostics
- 3 2 1 0 21. Isolate system faults in various types of networks, cables, data modems, and carrier systems.

10105 NetWare Routing

- 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. Demonstrate knowledge of the IPX/SPX protocol suite.

- 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, firewall, 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. Isolate system faults in various types of networks, cables, data modems, and carrier systems.

10106 Wide-Area Telecommunications & Networking

- 3 2 1 0 1. Identify time, technology, and resource
- 3 2 1 0 2. Identify physical requirements for system implementation.
- 3 2 1 0 3. Identify system requirements for various types of installations.
- 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. Identify Structural capacities and Electrical wiring codes.

- 3 2 1 0 10. Analyze facilities' capacity planning (power conduit).
- 3 2 1 0 11. Evaluate the potential effect of emerging on information system software/hardware.
- 3 2 1 0 12. Demonstrate knowledge of the characteristics of network components (e.g., hub, switches, routers, firewall).
- 3 2 1 0 13. Differentiate processes, services, and protocols
- 3 2 1 0 14. Differentiate between LANs, and WANs
- 3 2 1 0 15. Differentiate between point-to-point and point-multipoint network topologies
- 3 2 1 0 16. Demonstrate knowledge of packet-switching techniques
- 3 2 1 0 17. Identify basic physical and logical topologies (e.g. star, ring, bus).
- 3 2 1 0 18. Demonstrate knowledge of characteristics of connection-oriented and connectionless networks.
- 3 2 1 0 19. Identify emerging networks.
- 3 2 1 0 20. Select a LAN/WAN technology that meets defined set of requirements.
- 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 principles and operation of fiber optics, analog and digital
- 3 2 1 0 23. Demonstrate knowledge of the TCP/IP protocol
- 3 2 1 0 24. Demonstrate knowledge of firewall implementation between trusted network and
- 3 2 1 0 25. Configure a Virtual Private Network (VPN) to form the infrastructure of the WAN.
- 3 2 1 0 26. Demonstrate knowledge of interconnecting LANs using WAN services.
- 3 2 1 0 27. Demonstrate knowledge of the role that routers, firewalls, intrusion detection systems, And VPNs play in security
- 3 2 1 0 28. Demonstrate knowledge of network operating systems (i.e., Windows XP, LINUX, UNIX, etc.).

- 3 2 1 0 29. Install structured cabling.
- 3 2 1 0 30. Identify available diagnostic tools used for system maintenance.
- 3 2 1 0 31. Respond to system messages.
- 3 2 1 0 32. Document network system malfunctions.
- 3 2 1 0 33. Fix recoverable problems.
- 3 2 1 0 34. Create maintenance plans for regular integrity checks.
- 3 2 1 0 35. Demonstrate knowledge of basic troubleshooting checks.
- 3 2 1 0 36. Document results and solutions.
- 3 2 1 0 37. Isolate system faults in various types of networks, cables, data modems, and carrier systems.

10107 Wireless Networking

- 3 2 1 0 1. Identify hardware, networking, and software system functional requirements.
- 3 2 1 0 2. Identify physical requirements for system implementation
- 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. Define system and software requirements.
- 3 2 1 0 6. Evaluate installation requirements.
- 3 2 1 0 7. Resolve conflicting requirements.
- 3 2 1 0 8. Identify site and system constraints.
- 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. Develop security plan.

- 3 2 1 0 13. Demonstrate knowledge of the characteristics and uses of network components (e.g., hub, switches, routers, firewall).
- 3 2 1 0 14. Differentiate between point-to-point and point-to- multipoint network topologies.
- 3 2 1 0 15. Identify emerging networks.
- 3 2 1 0 16. Demonstrate knowledge of the principles and operation of fiber optics, analog and digital circuits.
- 3 2 1 0 17. Demonstrate knowledge of the principles and operation of wire (coaxial, fiber optics, etc.) and wireless systems.
- 3 2 1 0 18. Demonstrate knowledge of the TCP/IP protocol suite.
- 3 2 1 0 19. Identify standard high-speed networks (e.g., broadband, ISDN, SMDS, ATM, FDDI).
- 3 2 1 0 20. Install appropriate operating system hardware and software and peripherals.
- 3 2 1 0 21. Recognize environmental problems.
- 3 2 1 0 22. Demonstrate knowledge of the basic elements of network maintenance.
- 3 2 1 0 23. Fix recoverable problems.

10108 Network Security

- 3 2 1 0 1. Identify security requirements
- 3 2 1 0 2. Analyze existing procedures.
- 3 2 1 0 3. Define business objectives to be achieved by the application.
- 3 2 1 0 4. Identify site and system constraints.
- 3 2 1 0 5. Develop security plan.
- 3 2 1 0 6. Identify security requirements and the need for data protection.
- 3 2 1 0 7. Identify specific access levels that need to be accommodated.
- 3 2 1 0 8. Match security system design to identified security requirements.

- 3 2 1 0 9. Demonstrate knowledge of the role that routers, firewalls, intrusion detection systems, and VPNs play in security.
- 3 2 1 0 10. Demonstrate knowledge security requirements and the need for data protection.
- 3 2 1 0 11. Demonstrate the knowledge of access levels that need to be accommodated
- 3 2 1 0 12. Implement security plan.
- 3 2 1 0 13. Evaluate installation requirements.
- 3 2 1 0 14. Install information system application programs in accordance with requirements.
- 3 2 1 0 15. Recognize security problems.
- 3 2 1 0 16. Develop a disaster recovery plan.
- 3 2 1 0 17. Formulate a support plan
- 3 2 1 0 18. Identify resources and risks.
- 3 2 1 0 19. Identify support requirements.

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

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.
- 3 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.
- 3 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.

APPLICATION LEVEL COURSES

10109 Essentials of Network Operating Systems

- 3 2 1 0 1. Identify new application requirements within the system.
- 3 2 1 0 2. Identify physical requirements for system implementation.
- 3 2 1 0 3. Identify system requirements for various types of installations
- 3 2 1 0 4. Demonstrate knowledge of the characteristics and uses of network components (e.g., hub, switches, routers, firewall).

- 3 2 1 0 5. Differentiate between a physical and logical topology.
- 3 2 1 0 6. Differentiate processes, services, and protocols
- 3 2 1 0 7. Identify how the four components of a network operating system (i.e., server platform, network services software, network redirection software,
- 3 2 1 0 8. Analyze current trends and development in LANs.
- 3 2 1 0 9. Demonstrate knowledge of local-area network (LAN) trends and issues
- 3 2 1 0 10. Demonstrate knowledge of the reasons for installing a network.
- 3 2 1 0 11. Trace the evolution of networks.
- 3 2 1 0 12. Demonstrate knowledge of the general characteristics of network operating systems.
- 3 2 1 0 13. Identify the steps in a disaster recovery plan and a business resumption plan.
- 3 2 1 0 14. Define scope of work to meet customer needs
- 3 2 1 0 15. Identify skill level needs of support personnel.
- 3 2 1 0 16. Identify support requirements

10110 Microsoft Certified Personnel

- 3 2 1 0 1. Identify new application requirements within the system.
- 3 2 1 0 2. Identify physical requirements for system implementation.
- 3 2 1 0 3. Identify system requirements for various types of installations
- 3 2 1 0 4. Demonstrate knowledge of the characteristics and uses of network components (e.g., hub, switches, routers, firewall).
- 3 2 1 0 5. Differentiate between a physical and logical topology.

- 3 2 1 0 6. Differentiate processes, services, and protocols.
- 3 2 1 0 7. Identify how the four components of a network operating system (i.e., server platform, network services software, network redirection software,
- 3 2 1 0 8. Analyze current trends and development in LANs.
- 3 2 1 0 9. Demonstrate knowledge of local-area network (LAN) trends and issues.
- 3 2 1 0 10. Demonstrate knowledge of the reasons for installing a network.
- 3 2 1 0 11. Trace the evolution of networks.
- 3 2 1 0 12. Demonstrate knowledge of the general characteristics of network operating systems.
- 3 2 1 0 13. Identify the steps in a disaster recovery plan and a business resumption plan.
- 3 2 1 0 14. Define scope of work to meet customer needs.
- 3 2 1 0 15. Identify skill level needs of support personnel.
- 3 2 1 0 16. Identify support requirements.

10111 Particular Topics in Networking 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.

10148 Networking 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.

10149 Networking Systems - Other

- 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).
- 3 2 1 0 19. Identify emerging networks.
- 3 2 1 0 20. Select a LAN/WAN technology that meets defined set of requirements
- 3 2 1 0 21. Demonstrate knowledge of the principles and operation of fiber optics, analog and digital circuits.

- 3 2 1 0 22. Demonstrate knowledge of the principles and operation of wire (coaxial, fiber optics, etc.) and wireless systems.
- 3 2 1 0 23. Demonstrate knowledge of the TCP/IP protocol suite.
- 3 2 1 0 24. Configure a Virtual Private Network (VPN) to form the infrastructure of the WAN.
- 3 2 1 0 25. Demonstrate knowledge of firewall implementation between trusted network and WAN.
- 3 2 1 0 26. Demonstrate knowledge of interconnecting LANs using WAN services.
- 3 2 1 0 27. Demonstrate knowledge of the role that routers, firewalls, intrusion detection systems, and VPNs play in security.
- 3 2 1 0 28. Demonstrate knowledge of network operating systems (i.e., Windows XP, LINUX, UNIX, etc.).
- 3 2 1 0 29. Install structured cabling.
- 3 2 1 0 30. Create maintenance plan for regular integrity checks.
- 3 2 1 0 31. Document network system malfunction(s).
- 3 2 1 0 32. Fix recoverable problems.
- 3 2 1 0 33. Identify available diagnostic tools used for system maintenance.
- 3 2 1 0 34. Respond to system messages
- 3 2 1 0 35. Demonstrate knowledge of basic troubleshooting steps.
- 3 2 1 0 36. Document results and solutions.
- 3 2 1 0 37. Isolate system faults in various types of networks, cables, data modems, and carrier systems.

- 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.

21205 Project Management and Resource Scheduling

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.