

I. COURSE INFORMATION

- A. Computer Science 241 Computer Network +
- B. 3 credit hours
- C. West, Jill, Tamara Dean, Jean Andrews. *Network + Guide to Networks*. 8th ed. MA: Cengage, 2019
- D. Prerequisites: None

II. COURSE DESCRIPTION

This course is designed to provide students with skills in configuring, maintaining, and troubleshooting network devices using appropriate network tools the accordance with the Comp-TIA Network+ certification objectives.

III. LEARNING OUTCOMES

- A. Network architecture
 - a. Explain the functions and applications of various network devices
 - b. Compare and contrast the use of networking services and applications
 - c. Install and configure the following networking services/applications
 - d. Explain the characteristics and benefits of various WAN technologies
 - e. Install and properly terminate various cable types and connectors using appropriate tools
 - f. Differentiate between common network topologies
 - g. Differentiate between network infrastructure implementations
 - h. Given a scenario, implement and configure the appropriate addressing schema
 - i. Explain the basics of routing concepts and protocols
 - j. Identify the basic elements of unified communication technologies
 - k. Compare and contrast technologies that support cloud and virtualization
 - l. Given a set of requirements, implement a basic network
- B. Network operations
 - a. Given a scenario, use appropriate monitoring tools
 - b. Given a scenario, analyze metrics and reports from monitoring and tracking performance tools
 - c. Given a scenario, use appropriate resources to support configuration management
 - d. Explain the importance of implementing network segmentation
 - e. Given a scenario, install and apply patches and updates
 - f. Given a scenario, configure a switch using proper features
 - g. Install and configure wireless LAN infrastructure and implement the appropriate technologies in support of wireless capable devices
- C. Network security
 - a. Compare and contrast risk related concepts
 - b. Compare and contrast common network vulnerabilities and threats
 - c. Given a scenario, implement network hardening techniques
 - d. Compare and contrast physical security controls
 - e. Given a scenario, install and configure a basic firewall
 - f. Explain the purpose of various network access control models
 - g. Summarize basic forensic concepts
- D. Troubleshooting
 - a. Given a scenario, implement a network troubleshooting methodology
 - b. Given a scenario, analyze and interpret the output of troubleshooting tools
 - c. Given a scenario, troubleshoot and resolve common wireless issues
 - d. Given a scenario, troubleshoot and resolve common copper cable issues

- e. Given a scenario, troubleshoot and resolve common fiber cable issues
- f. Given a scenario, troubleshoot and resolve common network issues
- g. Given a scenario, troubleshoot and resolve common security issues
- h. Given a scenario, troubleshoot and resolve common WAN issues
- E. Industry standards, practices, and network theory
 - a. Analyze a scenario and determine the corresponding OSI layer
 - b. Explain the basics of network theory and concepts
 - c. Given a scenario, deploy the appropriate wireless standard
 - d. Given a scenario, deploy the appropriate wired connectivity standard
 - e. Given a scenario, implement the appropriate policies or procedures
 - f. Summarize safety practices
 - g. Given a scenario, install and configure equipment in the appropriate location using best practices
 - h. Explain the basics of change management procedures
 - i. Compare and contrast ports and protocols
 - j. Given a scenario, configure and apply the appropriate ports and protocols

IV. MAJOR CONTENT AREAS

- A. Networking concepts
- B. Network installation and configuration
- C. Network media and topologies
- D. Network management
- E. Network security

V. ASSIGNMENTS

- A. Reading assignments
- B. Discussions
- C. Chapter examinations
- D. Hands on and simulation labs

VI. EVALUATION METHODS

- A. Written objective and/or subjective exams
- B. Practical laboratory assignments and exams
- C. Class projects