

SYLLABUS
PART I
EDISON STATE COMMUNITY COLLEGE
CIS 214S NETWORKING ESSENTIALS
3 CREDIT HOURS

COURSE DESCRIPTION

Provides foundational networking skills for installing, operating, managing, maintaining, and troubleshooting networks. Topics include data communications, network components, the OSI model, communication protocols, and common network topologies and infrastructures. Hands-on labs and simulations develop practical configuration and troubleshooting skills. Prepares students for the CompTIA Network+ (N10-009) certification exam. Discounted CompTIA Network+ Certification Exam voucher available upon successful completion of this course. Prerequisite: CIS 111S.

COURSE GOALS

The student will:

Bloom's Level		Program Outcomes
2	1. Explain the fundamental concepts of network topologies, including star, mesh, and bus configurations.	3
2	2. Implement various network media and cabling standards, including Ethernet, fiber optics, and wireless.	8
3	3. Demonstrate the installation, configuration, and management of network devices, including switches, routers, and firewalls.	8
4	4. Analyze network addressing schemes, including IPv4, IPv6, and subnetting.	2
3	5. Troubleshoot network services, such as DHCP, DNS, and NAT, to ensure proper network operation.	4
3	6. Utilize network monitoring tools like Wireshark to analyze network traffic and detect potential anomalies or security breaches.	3
6	7. Design a secure network infrastructure, incorporating firewalls, VPNs, and access controls.	2
5	8. Assess network vulnerabilities and identify strategies to mitigate potential risks using current cybersecurity methodologies.	5
3	9. Deploy wireless networking standards and technologies to support a secure network environment.	8
6	10. Document network configurations, security policies, and procedures to support IT governance and compliance.	9
2	11. Explain the OSI and TCP/IP models and their relevance to network communication protocols and processes.	1
5	12. Evaluate emerging network technologies, such as cloud computing and virtualization, for their impact on network architecture and security.	7

CORE VALUES

The Core Values are a set of principles that guide in creating educational programs and environments at Edison State. They include communication, ethics, critical thinking, human diversity, inquiry/respect for

learning, and interpersonal skills/teamwork. The goals, objectives, and activities in this course will introduce/reinforce these Core Values whenever appropriate.

TOPIC OUTLINE

1. Networking Concepts, Topologies, and Architecture.
2. Basic Switch and End Device Configuration.
3. OSI and TCP/IP Models.
4. Network Media, Cable Types, Standards, and Connectors.
5. Network Devices: Switches, Routers, Firewalls, Hubs, and Access Points.
6. IP Addressing, Subnetting, IPv4, and IPv6.
7. Network Services and Protocols, Including TCP/IP, UDP, ICMP, DHCP, DNS, NAT, SNMP, and VPNs.
8. Network Devices, Including Wireless Networks with Security Protocols.
9. Routing, Switching, VLANs, and Trunking.
10. Network Security: Firewalls, VPNs, ACLs, Authentication, and Encryption.
11. Network Monitoring Tools, Create Documentation, and Analyze Performance.
12. Network Issues Using Command-line Tools.
13. Network Mapping and Enumeration Using Networking Tools (e.g.Nmap) to Identify Hosts, Services, and Network Components.
14. Virtualization, Cloud Computing, and Service Models (IaaS, SaaS, PaaS).
15. Network Policies, Change Management, and Disaster Recovery.
16. Network Vulnerabilities, Threats, and Risk Management.
17. Current Networking Trends: SDN, IoT, and Emerging Technologies.
18. Creation of a Small Network.