

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

COMPUTER AND INFORMATION SCIENCE 207 – CISCO NETWORKING ACADEMY VII

2 hours lecture, 3 hours laboratory, 3 units

Catalog Description

Cisco Networking Academy VII–Switch is the fifth level of Cisco Networking Academy routing and switching courses and one of three courses for the Cisco Certified Networking Professional designation. Students will learn how to implement, monitor, secure, and maintain network switching solutions in converged enterprise campus networks. Campus Network Technologies include: Multilayer Switching, VLANs, VTP (VLAN Trunking Protocol), STP (Spanning Tree Protocol), Switch security techniques (Private VLANs, AAA, VACLs, IEEE 802.1X, and various IOS-based security methods), SPAN (Switched Port Analyzer), PAGP and LACP (EtherChannel, Link Aggregation Control Protocol), Inter-VLAN Routing, HSRP (Hot Standby Router Protocol), VRRP (Virtual Redundant Router Protocol), GLBP (Gateway Load Balancing Protocol), SNMP (Simple Network Management Protocol) and NTP (Network Time Protocol). This lab-intensive course provides hands-on learning and practice to reinforce configuration skills using Cisco networking devices.

Prerequisite

“C” grade or higher or “Pass” in CIS 204 or equivalent or successful completion of the current version of CCNA1, 2, 3 and 4 at another Cisco Networking Academy or possess a current CCNA certification

Entrance Skills

Without the following skills, competencies and/or knowledge, students entering this course will be highly unlikely to succeed:

- 1) Basic understanding of routing and switching principles using the following networking protocols: single-area OSPF, EIGRP, RIP, HDLC, Frame Relay, PPP, VLANs, VTP, STP, TCP/IP, UDP, Ethernet, NAT, and DHCP.
- 2) Design and configure basic network configuration tasks and access lists using Cisco’s CLI (command line interface).

Course Content

- 1) Switching Fundamentals
- 2) Network Design Fundamentals
- 3) Campus Network Architecture
- 4) Spanning Tree Protocol
- 5) Inter-VLAN Routing
- 6) First-Hop Redundancy
- 7) Network Management
- 8) Switching Features and Technologies for the Campus Network
- 9) High Availability
- 10) Campus Network Security

Course Objectives

Students will be able to:

- 1) Implement, monitor, and maintain switching in an enterprise campus network
- 2) Implement appropriate spanning tree protocols (IEEE802.1D, 802.1w, 802.1s, and Cisco proprietary) in campus networks.
- 3) Implement VLANs in campus networks using Inter-VLAN routing, LACP, PAgP, and DHCP.
- 4) Configure and optimize HSRP, VRRP, and GLBP redundancy on switches
- 5) Describe the Stackwise and VSS high availability switch technologies
- 6) Describe and implement LAN security features including AAA, Private VLANs, VLAN ACLs, and other IOS-based switch security tools

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) ++Written quizzes and exams that measure students' ability to describe network switching technologies, functions and characteristics, and analyze a scenario and choose the alternatives and troubleshooting options.
- 2) Scenario-based lab activities that measure students' ability to configure switching technologies on a switched campus network topology.
- 3) Practical application-based examinations that measure students' ability to evaluate a scenario-based switch topology; analyze the topology and determine configuration requirements/problems; configure multiple switches using the Cisco IOS to achieve the correct requirements of the scenario.

Special Materials Required of Student

Electronic storage media

Minimum Instructional Facilities

Computers with Internet Browser, Internet connectivity, and software; network connection not connected to school academic resources; 19 inch equipment racks populated with cross-connect patch panels, Cisco Access servers and switches, interconnecting CAT 5E and Serial cabling; White boards; student desks and chairs; teacher desk and chair; lab desks with computers not connected to the school academic network resources; overhead computer projection system and projection screen, printer; computer server; storage cabinets.

Method of Instruction

- 1) Lecture and demonstration
- 2) Hands-on practice using the laboratory routers, switches, patch panels, access servers, computers, and virtualized PCs

Out-of-Class Assignments

May include the following:

- 1) Reading assignments
- 2) Technical skill labs using NetLabs
- 3) Technical skill labs using laboratory routers, switches, patch panels, access servers, computers, and virtualized PCs
- 4) Tests and quizzes

Texts and References

- 1) Required(representative examples):

- a. Implementing Cisco IP Switched Networks (SWITCH) Foundation Learning Guide: (CCNP SWITCH 300-115) (Foundation Learning Guides) 1st Edition; by Richard Froom (Author), Erum Frahim (Author); Hardcover: 512 pages; Cisco Press; 1 edition (May 24, 2015); English; ISBN-10: 1587206641, ISBN-13: 978-1587206641
- 2) Supplemental (optional):
 - a. CCNP Routing and Switching Portable Command Guide Paperback – by Scott Empson (Author), Patrick Gargano (Author), & 1 more; Series: Portable Command Guide; Paperback: 416 pages; Cisco Press; 1 edition (January 1, 2015); English; ISBN-10: 1587144344; ISBN-13: 978-1587144349
 - b. CCNP Routing and Switching SWITCH 300-115 Official Cert Guide Hardcover - by David Hucaby (Author); Series: Official Cert Guide; Hardcover: 560 pages; Cisco Press; 1 edition (December 26, 2014); English; ISBN-10: 1587205602; ISBN-13: 978-1587205606

Exit Skills

Students having successfully completed this course exit with the following skills, competencies and/or knowledge:

- 1) Ability to configure, manage and troubleshoot IPv4 and IPv6 campus switched networks using VLAN technologies
- 2) Ability to configure, manage and troubleshoot IPv4 and IPv6 campus switched networks using security technologies
- 3) Ability to configure, manage and troubleshoot IPv4 and IPv6 campus switched networks using network redundancy technologies
- 4) Ability to configure, manage and troubleshoot IPv4 and IPv6 campus switched network using network management technologies

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Successfully configure an instructor-defined secure switch-based network scenario using the following switching technologies: HSRP, SNMPv3, VTPv2, LACP, PAgP, AAA, NTP, STP, and inter-VLAN routing