

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

COMPUTER AND INFORMATION SCIENCE 208 – CISCO NETWORKING ACADEMY VIII

2 hours lecture, 3 hours laboratory, 3 units

Catalog Description

Cisco Networking Academy VIII–TSHOOT is the seventh level of Cisco Networking Academy courses and one of three courses for the Cisco Certified Networking Professional designation. Students will learn how to monitor and maintain complex enterprise routed and switched IP networks. Skills learned are based on systematic and industry recognized approaches to plan and execute regular network maintenance including support and troubleshooting network problems using technology-based processes and best practices. Troubleshooting topics include: processes for complex enterprise networks; tools and applications; campus switched solutions; routing solutions; addressing services; network performance issues; converged networks; network security implementations; and complex enterprise networks. This lab-intensive course provides hands-on learning and practice to reinforce troubleshooting skills using Cisco networking devices.

Prerequisite

“C” grade or higher or “Pass” in CIS 205 and 207 or equivalent or successful completion of the current Cisco Networking Academy CCNP ROUTE and SWITCH courses at another Cisco Networking Academy or possess current CCNP ROUTE and SWITCH certifications

Entrance Skills

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

- 1) Advanced understanding of the routing and switching principles using the following networking protocols: single-area and multi-area OSPF, EIGRP, RIP, BGP, HDLC, PPP, VLANs, VTP, TCP/IP, Ethernet, DHCP, IEEE 802.1q, PAgP, LACP, STP, RSTP, MST, HSRP, VRRP, GLBP, IGMP, IPv4, IPv6
- 2) Use router on switch CLI show and debug commands to identify configuration settings and device operational conditions

Course Content

- 1) Troubleshooting principles and approaches
- 2) Structured Troubleshooting Methods
- 3) Structured Network Maintenance benefits, services, tools
- 4) Troubleshooting techniques for Layer 2 and Layer 3 networks
- 5) Troubleshooting Case Studies

Course Objectives

Students will be able to:

- 1) Maintain and monitor complex enterprise routing and switching networks.

- 2) Implement a structured process for collecting network information, capturing traffic, using event notifications, and working with maintenance and troubleshooting tools.
- 3) Identify, Analyze, and Troubleshoot network problems in complex router and switch enterprise networks using structured troubleshooting methods and procedures.

Method of Evaluation (Measuring Student Learning Outcomes with Representative Assignments)

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 Students

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 routers and switches, access servers, interconnecting CAT 5E and Serial cabling; whiteboards; 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 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 example): Troubleshooting and Maintaining Cisco IP Networks (TSHOOT) Foundation Learning Guide: (CCNP TSHOOT 300-135) (Foundation Learning Guides) 1st Edition; by Amir Ranjbar (Author); Series: Foundation Learning Guides; Hardcover: 496 pages; Publisher: Cisco Press; 1 edition (January 10, 2015); Language: English; ISBN-10: 158720455X; ISBN-13: 978-1587204555

2) Supplemental (recommended):

- 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; Publisher: Cisco Press; 1 edition (January 1, 2015); Language: English; ISBN-10: 1587144344; ISBN-13: 978-1587144349
- b. CCNP Routing and Switching TSHOOT 300-135 Official Cert Guide 1st Edition; by Raymond Lacoste (Author), Kevin Wallace (Author); Hardcover: 1024 pages; Cisco Press; 1 edition (December 20, 2014); English; ISBN-10: 1587205610; ISBN-13: 978-1587205613

Exit Skills

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

- 1) Monitor, maintain, and troubleshoot a complex network.
- 2) Plan and document the most common maintenance functions in complex enterprise networks.
- 3) Develop a troubleshooting process to identify and solve problems in complex enterprise networks.
- 4) Select tools that best support specific troubleshooting and maintenance processes in large, complex enterprise networks.
- 5) Practice maintenance procedures and fault resolution in switched and routed environments.
- 6) Troubleshoot:
 - a. IPv4 and IPv6 addressing services.
 - b. Network infrastructure services.
 - c. Network performance issues on routers and switches.
- 7) Practice maintenance procedures and fault resolution in a secure infrastructure.

Student Learning Outcomes

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

- 1) Successfully troubleshoot and repair a complex router and switch network instructor-defined scenario consisting of multiple problems using structured troubleshooting procedures.