INT 293 - Internetworking III

Internetworking Three is the third and final course of the Internetworking series that collectively cover the material needed for the CCNA certification. It continues to explore and expand on the internetworking theories introduced in the previous internetworking courses. This course is roughly divided into two halves specifically covering the third and forth semesters of the Cisco Networking Academy CCNA curriculum.

PREREQUISITES:

INT292 – Internetworking II (or CCNA Semester Two – Routing Protocols and Concepts equivalent)

INSTRUCTOR:

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REQUIRED LEARNING RESOURCES AND TEXTS:

Cisco Networking Academy – “CCNA Exploration 4.0 Curriculum”

 Semester 3 – LAN Switching and Wireless
 Semester 4 – Accessing the WAN

Access to the curriculum is provided online to students enrolled in the course. No textbooks required.

COURSE DESCRIPTION:

This course continues to focus on internetworking concepts specifically presenting a comprehensive overview of switching and wireless connectivity in local area networks. Also introduced in this course are the common methods/technologies for accessing wide area networks. Students taking this course are provided the necessary knowledge to understand and implement various features of: LAN switching, wireless, and WAN access. In this course students continue to expand their understanding of internetworking through both theoretical discussion of and hands-on experience with networking concepts.

OBJECTIVES:

This course continues to introduce of internetworking theories and technologies. Topics covered in roughly the first half of the semester are those included in CCNA Semester 3 – LAN Switching and Wireless

Upon completion of the LAN Switching and Wireless portion, students will be able to complete the following objectives:

- Interpret network diagrams
- Identify and correct network problems using the 7 layered OSI model
- Select the appropriate media, cables, ports and connectors needed to connect network devices
- Explain the technology and media access method of Ethernet
- Explain basic switching concepts and operation
- Describe enhanced switching technologies such as VLANS, VTP, RSTP, Per VLAN Spanning Tree Protocol (PVSTP), and 802.1q
- Perform various switch and router configuration tasks including remote access management, VLAN configuration, interVLAN routing, VLAN Trunking Protocol (VTP), Rapid Spanning Tree Protocol (RSTP)
- Verify network status and perform troubleshooting operations using basic network utilities (i.e. ping, traceroute, telnet, ssh, arp, ipconfig, etc) and appropriate show and debug commands.
- Describe standards associated with wireless media (IEEE WI-FI Alliance, ITU/FCC)
- Identify and describe the purpose of components in a wireless network: Service Set Identification (SSID), Basic Service Set (BSS), and Extended Service Set (ESS)
- Compare and contrast various wireless encryption methods.
- Describe common wireless-network implementation issues

Upon completion of CCNA Semester 4 - Accessing the WAN students will be able to complete the following objectives:

- Describe the impact of voice and video over IP application networks
- Describe the components required for network and Internet communications
- Implement basic switch security: Port Security, Trunk Access, and Management VLANs
- Explain the operations of as well as configure, verify and troubleshoot DHCP and DNS
- Describe current network security threats and explain how to implement a comprehensive security policy to mitigate such common threats.
- Describe the functions of common security appliances and applications and recommend security practices to secure network devices
- Describe the purpose and types of Access Control Lists (ACLs)
- Configure, apply, monitor, and troubleshoot ACLs based on network filtering requirements
- Explain and configure Network Address Translation (NAT)
- Along with using the command-line interface, students will learn to configure several services using Cisco’s Security Devices Manager
- Describe different WAN technologies
- Configure PPP connections between Cisco routers
- Troubleshoot WAN implementations issues
- Describe the importance, benefits, and impact of VPN technology

COURSE ACTIVITIES:

Students in this course will study both the CCNA Exploration 4.0: LAN Switching and Wireless curriculum as well as the CCNA Exploration 4.0: Accessing the WAN curriculum. Each chapter will have an associated formative assessment. Additional knowledge will be gained through hands-on laboratory exercises along with network simulation activities integrated into the on-line curriculum. For summative assessment, there will be one written Final Exam associated with each of the curriculums for a total of two in the course. The LAN Switching and Wireless curriculum final will be considered the Mid-Term Exam. There will also be a Skills Based Assessment for each curriculum for a total of two SBAs in this course.

Additional readings may be provided throughout the semester as supplemental information to the text. Any supplemental material provided has a potential of becoming lab exercise(s) and/or a quiz subject.

At the conclusion of this course, students will be expected to sit for the current CCNA Certification Exam (640-802).
Grading Scale:

A  90 - 100
B  80 - 89
C  70 - 79
D  60 - 69
U  0 - 59