SDCCD Continuing Education
Educational Cultural Complex (ECC)
Cisco Networking Academy
CCNA Exploration – LAN Switching and Wireless 4.0.3.0
Spring 2013
Syllabus

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|---|---|
| Section: | Spring 2013 CRN: 6538C |
| Days/Time: | Tuesday / Thursday 6:00 P.M. – 9:30 P.M. |
| Location: | ECC, Room B100 |
| Class Start – End Dates: | April 2, 2013 – June 6, 2013 (20 Meetings) |
| Instructor: | Richard L. Holladay, CCNA, Ph.D. |
| Instructor's Website: | www.richardholladay.com |
| Instructor's Email: | cisco (at) richardholladay.com |
| Cisco Academy NetSpace Web Site: | http://www.netacad.com |

## CISCO ACADEMY GOALS AND OBJECTIVES

Welcome to *LAN Switching and Wireless,* the third course of the Cisco Networking Academy program! This course provides a comprehensive, theoretical, and practical approach to learning the technologies and protocols needed to design and implement a converged switched network. Students learn about the hierarchical network design model and how to select devices for each layer. The course explains how to configure a switch for basic functionality and how to implement virtual LANs, VTP, and inter-VLAN routing in a converged network. The different implementations of Spanning Tree Protocol in a converged network are presented, and students develop the knowledge and skills necessary to implement a Wireless LAN in a small-to-medium network.

## ADVISORY COURSE PREREQUISITES

Successful completion of the Cisco Academy *Network Fundamentals*, and *Routing Protocols and Concepts* courses are prerequisites for this course.

## COURSE GOALS AND OBJECTIVES

Upon completion of the *LAN Switching and Wireless* course, students will be able to perform the following functions:

- Identify and correct common network problems at layer 1, 2, 3, and 7 using a layered model approach.
- Interpret network diagrams.
- Select the appropriate media, cables, ports, and connectors to connect switches to other network devices and hosts.
- Explain the technology and media access control method for Ethernet networks.
- Explain basic switching concepts and the operation of Cisco switches.
- Perform and verify initial switch configuration tasks including remote access management.
- Describe enhanced switching technologies such as VLANs, VLAN Trunking Protocol (VTP), Rapid Spanning Tree Protocol (RSTP), Per VLAN Spanning Tree Protocol (PVSTP), and 802.1q.
- Describe how VLANs create logically separate networks and how routing occurs between them.
- Configure, verify, and troubleshoot VLANs, trunking on Cisco switches, interVLAN routing, VTP and RSTP.
- Interpret the output of various **show** and **debug** commands to show the operational status of a Cisco switched network.
- Verify network status and switch operation using basic utilities such as ping, traceroute, Telnet, Secure Shell (SSH), Address Resolution Protocol (ARP), and ipconfig, as well as the **show** and **debug** commands.
- Identify, prescribe, and resolve common switched network media issues, configuration issues, auto negotiation, and switch hardware failures.
- Manage Cisco IOS Software.
- Manage Cisco IOS configuration files (save, edit, upgrade, restore)
- Describe standards associated with wireless media such as IEEE WiFi Alliance and ITU/FCC.

- Identify and describe the purpose of the components in a small wireless network such as Service Set Identification (SSID), Basic Service Set (BSS), and Extended Service Set (ESS).
- Identify basic configuration parameters on a Wireless network to insure that devices connect to the correct access ports.
- Compare and contrast Wireless Protected Access (WPA) security features and capabilities of open Wired Equivalent Privacy (WEP), and WPA-1/2 networks
- Describe common wireless-network implementation issues such as interference and misconfiguration.

Demonstrate knowledge gained from the course by completing the following tasks:
- Pass the *LAN Switching and Wireless* course Final Exam and Skills-Based Exam.
- Complete all assigned labs and homework assignments.
- Complete the Cisco *ESwitching Course Feedback*.

## MATERIALS AND TEXTBOOKS

**Cisco Networking Academy NetSpace Website:** http://www.netacad.com
**Instructor's Website:** http://www.richardholladay.com
**Required Texts:** None.
**Recommended Texts:**

Lewis, Wayne. *LAN Switching and Wireless, CCNA Exploration Companion Guide.* 2008: Indianapolis, Cisco Press. **ISBN-13: 978-1-58713-207-0.**

Johnson, Allan. *LAN Switching and Wireless, CCNA Exploration Labs and Study Guide.* 2008: Indianapolis, Cisco Press. **ISBN-13: 978-1-58713-202-5.**

Empson, Scott. *CCNA Portable Command Guide, 2nd Ed.* 2007: Indianapolis, Cisco Press. **ISBN-13: 978-1-58720-193-6.**

Perlman, Radia. *Interconnections: Bridges, Routers, Switches, and Internetworking Protocols (2nd Edition)*. 1999: Addison-Wesley. **ISBN-13: 978-0201634488.**

## CLASS DETAILS

### Attendance - Biweekly Classes

Regular attendance is a requirement for this class. A roll sheet will be provided for your signature and time of attendance. If you fail to sign-in, you will be counted as absent. If you are absent a total of 3 class meetings during the semester you will be automatically dropped and not be able to continue the class. In addition, Cisco has specific minimum requirements for hours of instruction. Students are expected to **ATTEND EVERY CLASS, BE ON TIME, AND STAY FOR THE ENTIRE CLASS.** Furthermore, it is very disruptive for the class if you arrive late. The class will start and end on time, if you must arrive late please do not disturb your classmates. Use of computers, cell phones, and other electronic devices is not allowed during lecture.

### Dropping the Class

#### Voluntary Withdrawal

It is your responsibility to notify the instructor of your intent to withdraw from class. 'W's are not given-- you will simply receive no grade for the course. Any student who has stopped attending but has not notified the instructor of their intention to withdraw will receive an F in the course.

#### Automatic Withdrawal

Any student who accumulates a total of 3 absences, who consistently arrives late, or who fails to complete exams and/or lab assignments on time will be dropped from class.

### Assignments

#### Reading Assignments

All of the material for this course is available on the Cisco Academy Website. You are **required** to complete the reading assignment **before** the chapter lecture. Most students will spend an average of ten hours per week reading the material. Some chapters may take more than one reading to understand. Students are responsible for all terms and concepts in the chapters covered. We will not waste time during the lecture getting you up to speed on a chapter's content because you didn't "have time" to read the chapter.

#### Online Chapter Exams

All exams are administered online, in class, and enabled only after the topic has been completed. There are seven chapter exams and up to 2 may be repeated. No makeups are allowed. All exams are closed-book and proctored. Hand-copied notes can be used for any exam. **Copying of any exam questions in any manner whatsoever is forbidden and may lead to your expulsion from the Academy program. All USB flash drives must be removed from PCs during exams. The instructor may also forbid keyboard use during exams as well.**

**Packet Tracer Activities and Skills Integration Challenges**

Packet Tracer is an integral part of the curricula and not merely a simulator to replace lab equipment. There are 38 embedded Packet Tracer activities which can be done at home while studying the online chapters and are not submitted for credit. The seven *Skills Integration* PT Labs (found in the *Summary* section for each chapter online) are required, and must be uploaded into NetSpace for credit (see below). Use the labs in the *Assignments Section* in Netspace and download to your PC.

**Hands-On Hardware Labs**

The 21 hands-on labs are an essential part of the Academy. The understanding of lab assignments is an important part of passing the course. There are 7 required labs and 14 optional labs. **Students must print required labs at home and bring to class for completion. Optional labs do not need to be submitted. These must be done on lab equipment for credit, NOT Packet Tracer.**

**Skills-Based Final, Online Final, and Cisco Online ESwitching Course Feedback**

A skills-based final and an online final exam will be administered at the end of the course. The Final Exam will be comprehensive and all students must pass the final and the skills-based final to pass the course and be eligible for the *Accessing the WAN* course. All labs, online chapter tests, and the skills-based final must be completed before you may take the final exam. You must score at least 70% on the Final Exam to pass, and it cannot be taken after the last class session for any reason. Cisco also requires that you complete the *ESwitching Course Feedback* before receiving a grade in the course and enrolling in any future Academy course.

**Policy for Late Submission of Labs - Weekday Classes**

Labs and PT SI assignments are designed to reinforce the concepts which will be tested in each chapter exam, so it is imperative that they be completed BEFORE you take the exam. Hardware labs are due at the end of assigned lab class (usually Wednesdays.) PT SI labs are due **before** the beginning of the following week's class (via NetSpace upload only), *i.e.*, before the start of the chapter exam.

A 50% reduction of grade will be applied for all PT and hardware labs submitted after the start of the week following their assignment, **no matter what the reason.** After the end of that class, no credit will be given. Missing class does not change this policy.

**Evaluation and Grading**

Final course grade component weights:

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|---|---|
| Labs (7 required) | 15% |
| Packet Tracer SI Labs (7 ) | 10% |
| Chapter Exams (7) | 35% |
| Skills-Based Final* | 15% |
| Final Exam (65% min to pass)* | 25% |
| Cisco *ESwitching Course Feedback** | 0% |
| TOTAL: | 100% |

*Must pass/complete in order to continue to the *Accessing the WAN* course.

Final letter grade percentages:

| Grade | % |
|---|---|
| A | 100 – 90 |
| B | 89 – 80 |
| C | 79 – 70 |
| D | 69 – 60 |
| F | 59 and below |
| W / I | Not Assigned |

**Classroom Schedule**

<u>Lecture Session (Usually Monday)</u>
6:00 Chapter Exam*
7:00 Lecture
8:00 Open
9:30 Classroom Secured

<u>Lab Session (Usually Wednesday)</u>
6:00 Lab Session Begins
9:15 Lab Closed
9:30 Classroom Secured

*All Exams will end at 6:50, no matter how late they were started.

## <u>INSTRUCTIONAL FACILITIES</u>

- Classroom
- Laboratory with rack-mounted Cisco equipment and Workstations
- Personal computer for each student with online access in Classroom
- Appropriate course software
- Instructor's Website with all lectures and course materials
- Cisco Network Academy NetSpace Website

**IMPORTANT DATES**

***Please refer to the appropriate official San Diego Community College District Continuing Education document to insure compliance with any College deadline.***

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|---|---|
| April 2 | First Class Meeting; Class and Cisco NetSpace Enrollment |
| May 30 / June 4 | Skills-Based Assessment (Required) |
| June 6 | Final Exam (Required); Course Feedback (Required); Last class meeting. |

**COURSE SCHEDULE (20 Class Meetings over 10 Weeks)**

***NOTE: This schedule will be followed as closely as possible but is subject to change.***

| Wk | Date | Topic | Exam | Labs / pkas Due[1] |
|---|---|---|---|---|
| 1 | Apr 2 | Ch 1 LAN Design – Lecture | | |
| | Apr 4 | Ch 1 LAN Design – Lab | | Lab 1.3.1 |
| 2 | Apr 9 | Ch 2 Basic Switch Concepts – Lecture | Ch 1 | 1.4.1.pka (due by 6:00) |
| | Apr 11 | Ch 2 Basic Switch Concepts – Lab | | Lab 2.5.1 |
| 3 | Apr 16 | Ch 3 VLANS – Lecture | Ch 2 | 2.6.1.pka (due by 6:00) |
| | Apr 18 | Ch 3 VLANS – Lab | | Lab 3.5.2 |
| 4 | Apr 23 | Ch 4 VTP – Lecture | Ch 3 | 3.6.1.pka (due by6:00) |
| | Apr 25 | Ch 4 VTP – Lab | | Lab 4.4.2 |
| 5 | Apr 30 | Ch 5 Spanning Tree (Traditional STP) – Lecture | Ch 4 | 4.5.1.pka (due by 6:00) |
| | May 2 | Ch 5 Spanning Tree (Current STP Variants) – Lecture | | |
| 6 | May 7 | Ch 5 Spanning Tree – Lab | | Lab 5.5.2 |
| | May 9 | Ch 6 Inter-VLAN Routing – Lecture | Ch 5 | 5.6.1.pka (due by 6:00) |
| 7 | May 14 | Ch 6 Inter-VLAN Routing – Lab | | Lab 6.4.2 |
| | May 16 | Ch 7 Basic Wireless Concepts – Lecture | Ch 6 | 6.5.1.pka (due 6:00) |
| 8 | May 21 | Ch 7 Basic Wireless Concepts – Lab | | 7.5.2.pka (in Class) |
| | May 23 | IPv6 – Lecture | Ch 7 | 7.6.1.pka (due by 6:00) |
| **9** | May 28 | IPv6 – Lab; Exam Retakes (up to 2) | | CCNP OSPFv3 Lab |
| | **May 30** | **Skills-Based Assessment** | | |
| **10** | **Jun 4** | **Skills-Based Assessment** | | |
| | **Jun 6** | **Final Exam** | | |

[1]Required **PT SI** Labs can be found on NetSpace in **.pka** format. Save as *Lastname-labnum***.pka** (e.g., **Smith-1.4.1.pka**), and upload back to Netspace in the *Assignments Section*. PT SI Labs are due BEFORE the beginning of class, and receive a 50% penalty after class starts, and no credit after class ends. You may resubmit pkas as many times as you like before the deadline.

Required **Hardware Labs** are also in the NetSpace *Assignments Section* in .pdf format. Print labs at home and bring to class to complete on Cisco hardware **only**. Labs are due at the end of the same week as the chapter lecture. . I encourage you to do Packet Tracer versions of the hardware labs, but they will **NOT** be accepted for credit or in lieu of doing the lab in class on Cisco gear

**NOTE: All PT SI Lab and Hardware Lab assignments are subject to change.**

**Be sure to check the date and time in the course schedule above for all examinations. Copying and/or printing any test material or any of the curriculum other than the labs is strictly forbidden by Cisco ans will result in you being dropped from the class.**

## END OF SYLLABUS