Course Outline

COURSE: CSIS 175B DIVISION: 50 ALSO LISTED AS:

TERM EFFECTIVE: Fall 2011 Inactive Course

SHORT TITLE: ROUTER THEORY/TECH

LONG TITLE: Router Theory and Router Technologies

Units | Number of Weeks | Type | Contact Hours/Week | Total Contact Hours
---|---|---|---|---
4 | 18 | Lecture: 4 | 72 |
Lab: 0 | 0 |
Other: 0 | 0 |
Total: 4 | 72 |

COURSE DESCRIPTION:

This course is the second of four courses in the Cisco Networking Academy curriculum. This course is an introduction to router concepts and terminology including Ethernet and Token Ring frames, RIP and IGRP routing protocols, distance vector and link state routing, routing loop issues, TCP/IP basics, IP addressing, and IP access lists. Students will get hands-on experience configuring Cisco routers. This course has the option of a letter grade or pass/no pass. PREREQUISITE: CSIS 175A ADVISORY: CSIS 48

PREREQUISITES:
Completion of CSIS 175A, as UG, with a grade of C or better.

COREQUISITES:

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES
L - Standard Letter Grade
P - Pass/No Pass

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:
02 - Lecture and/or discussion
72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:
1. Identify and use the main Cisco IOS software setup, configuration
and interface commands.
ILO: 7,3,2,1
Measure: Homework, projects, lab exercises.
2. Load the Cisco IOS from flash memory, a TFTP server, of ROM.
ILO: 3,7,2
Measure: Homework, projects.
3. Backup and upgrade the Cisco IOS.
ILO: 3,7,2
Measure: Homework, lab exercises, projects.
4. Configure the router with IP addresses and the RIP and IGRP routing protocols.
ILO: 3,7,2
Measure: Homework, projects, tests, quizzes.

**CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS**

Inactive Course: 09/26/2011

<table>
<thead>
<tr>
<th>Week</th>
<th>Hours</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>EXERCISES/READING/HOMEWORK: Read these chapters and do the homework exercises. Describe the OSI Model. Describe LANs. Describe the basics of TCP/IP Addressing. Describe the Host Layers.</td>
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<tr>
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<td>EXERCISES/READING/HOMEWORK: Read these chapters and do the homework exercises. Understand basic information about routers and their use in networks. Understand WANs. Perform the network setup lab.</td>
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<tr>
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<td>EXERCISES/READING/HOMEWORK: Read these chapters and do the homework exercises. Understand the basics of router's command line interface. Demonstrate how to log into the router. Demonstrate how to enter router modes. Demonstrate ability to discern different router modes and commands.</td>
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<tr>
<td>4-5</td>
<td>8</td>
<td>Router Components. Router show commands and network neighbors. Basic network testing commands. Competence with the basic show command. Competence</td>
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11/6/2012

6  4  The Router Boot Sequence and Setup Mode. Configuring a Router from Setup Mode. Configuring a Router from Setup Mode in the Lab. EXERCISES/READING/HOMEWORK: Read these chapters and do the homework exercises. Understand the router boot sequence and setup mode. Demonstrate ability to configure a router from setup mode. Demonstrate ability to configure a router from setup mode - challenge lab.

7  4  Router Configuration. Where router configuration files are located. Router configuration. Basic router configuration skills. Router interface configuration. Network configuration. Router configuration. EXERCISES/READING/HOMEWORK: Read these chapters and do the homework exercises. Understand where router configuration files are located. Understand router configuration. Demonstrate basic router configuration skills. Demonstrate router interface configuration. Demonstrate a network configuration.

8  4  Basics of IOS Versions. Use and interpret the show version command. Load IOS images. Loading IOS image from a TFTP server. Loading a new IOS image. EXERCISES/READING/HOMEWORK: Read these chapters and do the homework exercises. Describe the basics of IOS versions. Load IOS images. Loading IOS image from a TFTP server. Loading a new IOS image.

9-10  8  Configure a Router from the CLI, for a router which has had a start-up configuration erased. The importance of individual router configuration. A flowchart showing the router configuration.
process. The router password recovery procedure.

EXERCISES/READING/HOMEWORK: Read these chapters and do the homework exercises. Configure a router from the CLI. Flowchart the router configuration process. Use the router password recovery procedure. Perform an individual router configuration lab.

11-12 8 The Basics of Layer 4. Some important layer 3 concepts. TCP/IP protocol suite. Use the show ARP command. Gather and use ARP table information. Remotely troubleshoot a router.

EXERCISES/READING/HOMEWORK: Read these chapters and do the homework exercises. Understand the basics of layer 4. Understand some important layer 3 concepts. Describe the TCP/IP protocol suite. Demonstrate ability to use the show ARP command. Demonstrate ability to gather and use ARP table information. Demonstrate ability to remotely troubleshoot a router.

13 4 IP addressing and subnetting. The role of DNS in router configurations. Assigning new subnet numbers to the semester 2 topology. Assigning subnet numbers to a real network.

EXERCISES/READING/HOMEWORK: Read these chapters and do the homework exercises. Understand IP addressing and subnetting. Understand the role of DNS in router configurations. Demonstrate the ability to assign new subnet numbers to the semester 2 topology. Demonstrate the ability to assign subnet numbers to a real network.


EXERCISES/READING/HOMEWORK: Read these chapters and do the homework exercises. Understand the basics of routing. Understand why routing protocols are necessary. Understand the basics of distance-vector routing. Understand the basics of Link-state routing. Understand the context of different routing protocols.


EXERCISES/READING/HOMEWORK: Read these chapters and do the homework exercises. Understand static routing and default routes. Understand interior and exterior
routing protocols. Understand RIP and IGRP.
Demonstrate the ability to set up static routes.
Demonstrate the ability to run RIP on a network.

17 4 Troubleshoot the 5-router network. The standard
configuration. Typical layer 1 errors. Typical
layer 2 errors. Typical layer 3 errors. Network
troubleshooting strategies.

EXERCISES/READING/HOMEWORK: Read these chapters and
do the homework exercises. Describe the standard
configurations. Describe layer 1-3 errors. Use
network troubleshooting strategies.

18 4 Final project and exam.

STUDENT PERFORMANCE OBJECTIVES:

Week 1
Students can understand the OSI Model.
Students can understand LANs.
Students can understand the basics of TCP/IP addressing.
Students can understand the Host Layers.

Week 2
Students understand basic information about routers and their
use in networks.
Students understand WANs.
Students perform the Network Setup lab.

Week 3
Students understand the basics of router's Command Line Interface.
Students demonstrate how to log into the router.
Students demonstrate how to enter router modes.
Students demonstrate ability to discern different router modes and
commands.

Weeks 4 & 5
Students understand router components.
Students can use router show commands, network testing commands.
Students can use Telnet, ping, and trace commands.

Week 6
Students understand the router boot sequence and setup mode.
Students demonstrate ability to configure a router from setup mode.

Week 7
Students can do basic router configuration.
Students can do network configuration.

Week 8
Students can load IOS images.
Students can load IOS image from a TFTP server.
Students can load a new IOS image.

Weeks 9-10
Weeks 11-12
Students can describe the basics of Layer 4 and Layer 3.
Students can use the show ARP commands.
Students can use ARP table information.
Students can remotely troubleshoot a router.

Week 13
Students can understand IP addressing and submetting.
Students can understand the role of DNS in router configurations.
Students can assign new submet numbers to the semester 2 topology.
Students can assign submet numbers to a real network.

Week 14
Students can understand the basics of routing.
Students can understand why routing protocols are necessary.
Students can understand the basics of distance-vector routing.
Students can understand the basics of link-state routing
Students can understand the context of different routing protocols.

Weeks 15-16
Students can use static routing and default routes.
Students can use interior and exterior routing protocols.
Students can use RIP and IGRP.
Students can set up static routes.
Students can run RIP on a network.

Week 17
Students can describe the standard configuration.
Students can describe layer 1-3 errors.

METHODS OF INSTRUCTION:
Lecture, demonstration, lab

METHODS OF EVALUATION:
The types of writing assignments required:
Written homework
Reading reports
Lab reports
The problem-solving assignments required:
Homework problems
Field work
Lab reports
Quizzes
Exams
The types of skill demonstrations required:
Class performance
Performance exams
The types of objective examinations used in the course:
Multiple choice
True/false
Matching items
Completion
Other category:
None
The basis for assigning students grades in the course:
Writing assignments: 10% - 40%
Problem-solving demonstrations: 30% - 50%
Skill demonstrations: 10% - 50%
Objective examinations: 5% - 20%
Other methods of evaluation: 0% - 0%

REPRESENTATIVE TEXTBOOKS:
Cisco Systems Networking Academy: First-Year Companion Guide’s, Vito Amato, Series Editor, Cisco Press, 2001, or other appropriate college level textbook.
Reading level of text: 11 Grade level.Verified by: dvt

ARTICULATION and CERTIFICATE INFORMATION
Associate Degree:
CSU GE:
IGETC:
CSU TRANSFER:
Transferable CSU, effective 200630
UC TRANSFER:
Not Transferable

SUPPLEMENTAL DATA:
Basic Skills: N
Classification: I
Noncredit Category: Y
Cooperative Education:
Program Status: 2 Stand-alone
Special Class Status: N
CAN:
CAN Sequence:
CSU Crosswalk Course Department: CSIS
CSU Crosswalk Course Number: 175B
Prior to College Level: Y
Non Credit Enhanced Funding: N
Funding Agency Code: Y
In-Service: N
Occupational Course: C
Maximum Hours:
Minimum Hours:
Course Control Number: CCC000015465
Sports/Physical Education Course: N
Taxonomy of Program: 070810