

CST 240 Routing Technologies Course Syllabus

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Course Description: Data networks impact our lives in our work and in our play. The router is at the heart of these networks. Their job is to determine the best path for routing packets. This course will focus on the router, starting with the basics. Topics will include: reading routing tables, configuring routers and seeing how packets change as they travel through the network. We will cover such topics as routing protocols (RIPv1 and RIPv2, EIGRP, OSPF) and the metrics defined by each, classful and classless routing behaviors and load balancing. The course will also include many opportunities for hands-on practice and troubleshooting network problems. This course prepares students to sit for the Cisco CCNA certification examination

Textbook: Interconnecting Cisco Network Devices, Part 2 (ICND2): (CCNA Exam 640-802 and ICND exam 640-816), 3rd Edition ISBN-10: 1-58705-463-9; ISBN-13: 978-1-58705-463-1; Published: Feb 13, 2008; Copyright 2008; Dimensions 7-3/8x9-1/8; Pages: 408; Edition: 3rd.

Computing Resources

The completion of this course requires the student to have personal computing resources readily available. The students will need internet access to read the curriculum and complete assignments for homework. "Packet Tracer" is simulation software, will be provided to the students, and will be used extensively to complete assignments.

Prerequisites

The completion of this course requires the successful completion of CST231, CompTIA A+ Certification or permission of instructor.

Instructional Philosophy: This course requires extensive student reading, completion of written assignments and completion of hands-on projects. There will be a balance of lecture and demonstration throughout the course.

The course presentation is designed to continually reinforce the material covered each week on approximately a module per week schedule. Typically 1 or 2 assignments are completed for each Module and each assignments has a set of review questions used to evaluate the completion of the lab.

The assessment for the course will be divided between the written assignments and module tests.

Course Goals

This curriculum provides students with the skills needed to succeed in networking-related degree programs and helps them prepare for CCNA certification. It also helps students develop the skills necessary to fulfill the job responsibilities of network technicians, network administrators, and network engineers. It provides a theoretically-rich, hands-on introduction to networking and the

Internet.

Major Course Projects and Assignments

Upon completion of the Routing Technologies course, Students will be able to perform the following tasks:

- Describe the purpose, nature, and operations of a router
- Explain the critical role routers play in enabling communications across multiple networks
- Describe the purpose and nature of routing tables - Describe how a router determines a path and switches packets
- Explain the route lookup process and determine the path packets will take in a network
- Configure and verify basic operations for a newly-installed router
- Describe the purpose of static routes and the procedure for configuring them
- Configure and verify static and default routing
- Describe the role of dynamic routing protocols and place these protocols in the context of modern network design
- Describe how metrics are used by routing protocols and identify the metric types used by dynamic routing protocols
- Identify the characteristics of distance vector routing protocols
- Describe the network discovery process of distance vector routing protocols using Routing Information Protocol (RIP)
- Describe the functions, characteristics, and operations of the RIPv1 protocol
- Compare and contrast classful and classless IP addressing - Describe classful and classless routing behaviors in routed networks
- Design and implement a classless IP addressing scheme for a given network
- Describe the main features and operations of the Enhanced Interior Gateway Routing Protocol (EIGRP)
- Use advanced configuration commands with routers implementing EIGRP and OSPF - Describe the basic features and concepts of link-state routing protocols
- Describe the purpose, nature, and operations of the Open Shortest Path First (OSPF) Protocol
- Configure and verify basic RIPv1, RIPv2, single area OSPF, and EIGRP operations in a small routed network
- Use router show and debug commands to troubleshoot common errors that occur in small routed networks

1. Technical Performance Projects. Module Laboratory Assignments will be completed throughout the duration of the course:

2. Applied Academics Projects. For each of the modules, the student's will be responsible for reading the module and completing the end-of-module review assignments. Weekly lectures, labs, and a test are completed to finalize the material in each module.

3. Problem Solving Projects. The student's will develop and practice their problem solving skills by completing labs. The various problems and issues that are presented serve as effective

means for the students to develop broad-based, practical troubleshooting skills required to tackle any networking issue.

Course Assessment Plan

Late Work: NO LATE WORK WILL BE ACCEPTED!!!

Make-ups: There will be no make-up tests unless previously arranged with the instructor.

Attendance: In accordance with the course catalog.

Grade Performance Standard

Performance Standards: Grades for the course will be based on the following levels of performance:

A. Independent Learner

Did research, designed and planned; applied academic skills; evaluated work and made adjustments; did quality work; needed little help from the teacher; sought and found resources independently; displayed a positive attitude; demonstrated knowledge with a grade of 90 or higher.

B. Semi-Independent Learner

Did research, designed and planned; needed some help from the teacher; did quality work with a few flaws; needed feedback from the teacher to realize work could use improvement; redid work to meet standards; displayed a generally positive attitude; demonstrated knowledge with a grade of 80 or higher.

C. Dependent Learner

Needed help to research, design and plan or had to be given a plan; relied a great deal on the teacher; had to be given procedures for performing tasks; required significant help to produce a quality product; needed help to evaluate a product; final product still did not meet standards; attitude displayed could use improvement; demonstrated knowledge with a grade of 70 or higher.

D. Highly Dependent Learner

Needed significant help to research, design and plan or had to be given a plan; relied a solely on the teacher; had to be given procedures for performing tasks; could not produce a quality product independently; needed help to evaluate a product; final product still did not meet standards; poor attitude; demonstrated knowledge with a grade of 65 or higher.

F. Failure

Did not complete assignments; if assignments were completed, they were of such low quality that they did not pass; failed to follow procedures; did not show criteria for determining quality; behavioral problem; scored less than 65 on knowledge tests; produced a poor or no portfolio.

Assessment Description**Percent of Grade**

Tests

40

Assignments

40

Homework

20

Tests will be scheduled on the assessment server for 7 days each week with appropriate time limits. It is the student's responsibility to take, or in some cases re-take, scheduled tests.

The instructor reserves the right to change any portion of this syllabus at any time.