

CS 176 – Routers and Routing Basics

Fall Semester 2005

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Syllabus/Course Outline
Attendance and Grading Policies

INSTITUTION: MSU – GREAT FALLS COLLEGE OF TECHNOLOGY
COURSE TITLE: Routers and Routing Basics
COURSE NUMBER: CS 176
NUMBER OF CREDITS 3 Semester
INSTRUCTOR: Bruce R. Gottwig

I. COURSE DESCRIPTION:

This course is the second of four networking support class which can lead to the Cisco Certified Network Associate (CCNA) certification. Routers and Routing Basics focuses on initial router configuration, Cisco IOS Software management, routing protocol configuration, TCP/IP, and access control lists (ACLs) Students will develop skills on how to configure a router, manage Cisco IOS Software, configure routing protocols, and create access lists controlling access to the router.

II. COURSE MATERIALS

Cisco Systems Networking Academy: First-Year Companion Guide. Third Edition. Cisco Systems, 2004. ISBN 1-58713-150-1 (recommended)

CCNA 1 and 2 Lab Companion: Revised Third Edition. Cisco Press, 2005 ISBN 1-58713-149-8 (required)

MSU-Great Falls, College of Technology NetLab account

III. COURSE OBJECTIVES:

This course is designed to introduce students to the area of routers and routing. Students will participate in and complete the requirements of the course with a grade of “C” or better. After completing this course, the student will be able to perform tasks relating to:

- Understanding the basics of WAN technologies and the routers role therein.
- Understand the router operating system relationship within a network
- Demonstrate how to start a router.
- Demonstrate the steps in a basic router configuration
- Understand and demonstrate how to discover connecting neighbors on a network.
- Understand and demonstrate the router boot sequence and verification.
- Understand and demonstrate the steps in managing the Cisco File System
- Understand the difference between static and dynamic routing
- Understand the fundamentals of distance vector routing protocols (RIP and IGRP)
- Evaluate TCP/IP error messages
- Understand and demonstrate the fundamentals of basic router troubleshooting
- Demonstrate an understanding of the TCP operation

- Know the basic transport layer ports
- Demonstrate an understanding of access control lists (ACLs) as they relate to routers
- Configure access control lists to block and allow various types of network traffic.

COURSE OUTLINE:

Module 1 – WANs and Routers

Module 2 – Introduction to Routers

Module 3 – Configuring a Router

Module 4 – Learning About Other Devices

Module 5 – Managing Cisco IOS Software

Module 6 – Routing and Routing Protocols

Module 7 – Distance Vector Routing Protocols

Module 8 – TCP/IP Suite Error and Control Messages

Module 9 – Basic Router Troubleshooting

Module 10 – Intermediate TCP/IP

Module 11 – Access Control Lists

Case Study – Router Case Study

Final Practical Exam – Modules 1-11

Final Written Exam – Modules 1 - 11

IV. Course Evaluation:

Participation:

This course is a blended distance learning course which means that participation is important and mandatory. Students are responsible to be prepared for each module prior to the on site module lecture. The material will be available both online within the Cisco Academy Connect website <http://cisco.netacad.net> and within the course textbook. Students will be required to complete all assigned lab assignments either on site or using the NetLab.

Evaluation:

Course evaluation will be based upon module exams, lab assignments, online final exam, and hands-on final exam. Module exams are formative in nature and can therefore be reviewed and retaken. The final online and hands-on exams are summative and may be retaken only twice. All final exams will be proctored.

Module lab scores are based upon the completion of each one assigned.

Item	Total
Module Exams	20%
Module Labs	20%
Final Hands-On Exam	30%
Final Online Exam	30%

Grading

A	90 – 100%
B	80 – 89%
C	70 – 79%
D	65-69%
F	64-0%

Special Note for Students with Disabilities

Students with disabilities are entitled to reasonable accommodations in their classes. If you have a disability that may require accommodation, please contact the Disability Services office in Academic Resources as early as possible in the semester.

Special Note on NDG NetLab: Cisco Networking Academy Edition

NetLab is an online Cisco Networking Academy online router and switch configuration tool. To use this tool, students will be assigned a login and password. Because NetLab is on the Internet students can schedule a time to use it from any where Internet is available. It is the student's responsibility to use the tool correctly. Any abuse of the NetLab or attached routers and switches by a student or students will cause revocation of it use.

Students will only be allowed to use NetLab after completing an orientation on its usage. Because only two pods will be available for student use, it is important that times be scheduled in advance. NetLab will be available 24/7 throughout the duration of the course.

Resources:

Cisco Networking Academy Connection: <http://cisco.netacad.net>

NDG NetLab: <http://netlab.msugf.edu>

CS-176 – Routers and Routing Basics
 Spring 2005 Schedule **10/24 – 12/15**
 (subject to change)

WEEK	DATES	DESCRIPTION
1	Mon 10/24	Introduction – Syllabus – Books
	Tue 10/25	Module 1 - Lecture
	Wed 10/26	Module 1 - Lab
	Thu 10/27	Module 1 - Exam
2	Mon 10/31	Module 2 - Lecture
	Tue 11/01	Module 2 - Lab
	Wed 11/02	Module 2 - Lab
	Thu 11/03	Module 2 - Exam
3	Mon 11/07	Module 3 - Lecture
	Tue 11/08	Module 3 - Lab - Exam
	Wed 11/09	Module 4 - Lecture
	Thu 11/10	Module 4 - Lab - Exam
4	Mon 11/14	Module 5 - Lecture
	Tue 11/15	Module 5 - Lab - Exam
	Wed 11/16	Module 6 - Lecture
	Thu 11/17	Module 6 - Lab - Exam
5	Mon 11/21	Module 7 - Lecture
	Tue 11/22	Module 7 - Lab - Exam
	Wed 11/23	Module 8 - Lecture
	Thu 11/24	Thanksgiving Holiday
6	Mon 11/28	Module 8 - Lab - Exam
	Tue 11/29	Module 9 - Lecture
	Wed 11/30	Module 9 - Lab
	Thu 12/01	Module 9 - Lab
7	Mon 12/05	Module 9 - Exam
	Tue 12/06	Module 10 - Lecture
	Wed 12/07	Module 10 - Lab - Exam
	Thu 12/08	Module 11 - Lecture
8	Mon 12/12	Module 11 - Lab - Exam
	Tue 12/13	Final Hands-on
	Wed 12/14	Final Hands-on
	Thu 12/15	Final Online