

Fall 2008

NET 335 – Introduction to Routers

Time & Location Monday 5:30-8:15
Skiff 100

Instructor Jim Hoag
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865-6459

Office Hours Monday , Before class in Skiff 100
M, T, W, F 1-2 West 108

Course Website

Textbook **CCNA: CISCO CERT NTWK ASSOC SG (W/CD)**
(Cisco Press - Lammle, 5th Edition

Another resource : Routing First, Parkhurst

Prerequisites NET 215

Course Description

This course provides an introduction to routers and data networks. Students will be exposed to Cisco hardware and they will learn how to install, configure, manage, and troubleshoot routers. Students will also gain an understanding of how routing is integrated into an enterprise network system, how to monitor and troubleshoot performance issues, and how to integrate information security using routers. (3 Credits)

Course Objectives

Course participants will be exposed to a wide range of topics relating to routers, routing protocols, security, network design, network management, and industry best practices. By the end of the semester, students who attend class and complete the assigned coursework will be able to:

- Understand, troubleshoot, and perform basic configuration of:
 - IP addressing
 - Static and default routes
 - Classless Inter-Domain Routing (CIDR)
 - Variable-Length Subnet Masks (VLSM)
 - Interior routing protocols RIP v1/v2 and OSPF
 - Security - Access control lists (ACLs)
 - Network management
 - Network and port address translation (NAT/PAT)
 - Route redistribution
 - Exterior routing protocol BGP

- Use network functionality requirements to design a solution and produce a working implementation incorporating the above technologies according to industry best practices.
- Additional topics as time allows including:
 - Route maps and route filtering
 - Quality of Service (QoS)
 - Virtual LANs (VLANs)
 - Stateful Access Control List (ACL) technologies
 - Virtual private networks (VPNs)

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Instructional Strategies

This course is comprised of the following instructional approaches:

Lectures

Lectures will be used to outline the technology subject(s) for the day, in preparation for each lab scenario. Lectures will focus on the overall technology concepts required to complete the lab scenario, as students will use these scenarios to further their understanding of the technology. Informal lectures may occur throughout the class time as deemed necessary by the instructor to clarify a technology, assist in configuration troubleshooting, or answer student questions.

Labs

This is a hands-on lab course. The majority of class time will be spent configuring equipment to reach a particular goal or set of goals outlined in the day's scenario. While the instructor is always available to provide guidance toward design, configuration, and troubleshooting, students are expected to be active in their approach toward solving lab scenarios.

Readings

Students will be required to read the course textbook in order to successfully complete lab scenarios and do well on homework and exams. Additional readings may be given if deemed appropriate. Occasionally, optional readings will be suggested for students that wish to research a particular topic in greater detail.

Assignments

Students will occasionally be given research-oriented homework assignments that cover material presented in class and in the assigned readings. These assignments will be submitted in written form, and may be presented and/or discussed in class.

Quizzes

Written quizzes will be used to evaluate student comprehension of fundamental technology concepts that are key to successful configuration, design, and troubleshooting.

Exams

Students will be given both a mid-term and final exam that may have both a written component and a hands-on component. The hands-on portion will essentially be a graded lab scenario incorporating several technologies covered in the course up to that point.

Successful completion of the hands-on portion of the exam in the time given is not necessarily required to achieve a satisfactory grade. Successful application of the principles, approaches, and concepts learned in class will be given precedence, as well as a demonstration of an understanding of the underlying technologies.

Addressing Core Competencies

This course contains elements that address the seven core competencies as outlined by Champlain College:

Critical Thinking/Quantitative Literacy

The lab scenarios, assignments, research, readings, and exams in this course require both critical thinking and quantitative literacy to be successfully completed. The importance of critical thinking will be highlighted when discussing and evaluating technology decisions during the lecture portion of this course and configuring the associated technologies in the lab scenarios. The significance of quantitative literacy will be emphasized when performing course research and completing reading assignments.

Writing

All assignments, quizzes, and exams will contain sections that require coherent, cohesive writing skills. Furthermore, because competent writing is also a fundamental workplace requirement, students are expected to follow proper grammar, punctuation, spelling, and style conventions when completing assignments.

Ethical Reasoning

Many technology issues have multiple ethical dilemmas associated with them. In this course students may discuss and debate the ethical merits of various technologies, practices, and methodologies during participation in class and on the course email list.

Oral Communication

The critical skill of coherent oral communication will be highlighted during class discussions and through students working together to achieve a solution to lab scenarios.

Technology Competency

This course will provide students with a detailed understanding of many different technologies. *See the course objectives for more detail on this item.*

Global Studies

All of the topics discussed in this course are of global importance and impact. In some cases, the international aspects of a particular topic may be highlighted to further enrich the students' understanding of that topic in lecture and on the course email list.

Course Policies

This course uses the following policies and procedures:

Grade Calculation

Students' final grades will be calculated according to the following list:

Lab participation	35%
Assignments	15%
Quizzes	10%
Midterm Exam	20%
Final Exam	20%

Attendance

Because this is a lab course, attendance is critical. If you are unable to attend a class, you are responsible for any material or assignments missed during your absence **prior** to the next class.

Lab Participation: Note that simply attending the lab and following the instructions does not constitute full participation. The student should demonstrate active engagement in the process and understanding of the lab objectives. Quite often troubleshooting across routers and workstations is necessary to solve problems. Students are expected to be actively engaged in all phases of labs: design issues, cabling, implementation, troubleshooting, diagnostics, tear-down.

Homework

When assigned, homework is due at the beginning of the next class following their assignment, unless otherwise noted. Late homework will not be accepted.

Quizzes/Exams

Students are required to take all quizzes and exams at the scheduled time unless arrangements are made with the instructor prior to the quiz or exam. Make-up quizzes and exams will be scheduled at a time convenient for the instructor.

Academic Honesty

Any assignment or exam in which the instructor suspects cheating, may be given a zero, according to the Champlain College student handbook. This policy will be strictly adhered to.

Collaboration

Student collaboration is encouraged, and may be occasionally assigned. However, be aware of the academic honesty policy above, and make sure the work you hand in is truly your own.

Course Withdrawal Voluntary:

It is the student's responsibility to officially withdraw from a course. Potential consequences of a student's failure to do so include: failing grades, reduction in financial aid and academic dismissal from the College.

Special Needs

If you believe that you have a disability requiring accommodations in this class, please contact the Coordinator of Support Services for Students with Disabilities as soon as possible. After you receive a letter documenting the appropriate accommodations, please see me so I can work with you to implement them in a timely fashion. It is the student's responsibility to seek and secure accommodations prior to the start of a test or project.

Contact:

Janine Allo – office: Hauke 007; phone: 802-651-5961; email:
allo@champlain.edu

Course Schedule (Tentative)

Date	Topic	Chapter(s)	Notes
Sept 8	1a. Course Overview/Introduction Getting to Know Your Lab Equipment 1b. IP Addressing and Static Routing	Chapter 4 Chapter 1 Chapter 5 (Pg 222-244)	Read Chapters 1,4, Ch 5 pg 222-264)
Sept 15	Interior Routing with RIP	Chapter 2 Chapter 5 (Pg 255-264)	Read Ch 6 pg 305-318
Sept. 22	Interior Routing with OSPF – Part 1	Chapter 6 (Pg 305-318)	HW: TBA
Sept. 29	Interior Routing with OSPF – Part 2	Chapter 6 (pg 319-327)	HW: TBA
Oct 6	Utilities/Multiple Routes		Quiz #1
Oct 14	Troubleshooting Routing	None	HW: TBA
Oct. 20	Midterm Exam		
Oct 27	Access Control Lists – Part 1	CH 10	HW: TBA
Nov 3	Access Control Lists – Part 2 NAT and PAT – Part 1	Ch 10 Ch 7 (pgs 92-96)	HW: TBA
Nov 10	NAT and PAT – Part 2	Ch 10 Ch 8	HW: TBA
Nov 17	Switches		
Nov 24	Route Redistribution, mapping	Material provided	
Nov 31	Exterior Routing with BGP	Material provided	Quiz ACL, NAT, PAT HW: TBA
Dec. 7	Putting It All Together	Ch 11	
Dec. 14	Review for Final		HW : TBA
	Final Exam		

*The most recent version of this schedule is available at the course website: