

COURSE SYLLABUS

NET230: Switches and Routers II

Course Description

Switches and Routers II provides a deeper understanding of the concepts setting up small to medium networks. Students will add to their understanding gained from the first course and expand their knowledge of the interaction of these network devices. They will learn to design and optimize networks to make them more efficient and secure. Students will gain much more hands-on experience configuring and troubleshooting the switches and routers.

General Course Information

| | |
|--|---------------------------|
| Number of Units/Weeks | 4/10 |
| #Hours Lecture/#Hours Laboratory/#Hours Homework | 40/0/80 |
| Prerequisite(s) | NET220 |
| Co-requisites (s) | None |
| Course Developer(s) | Michael Reed, M.S. |
| Date Approved / Last Review | September 2013 / Feb 2015 |

Learning Outcomes

- Design medium to large networks.
- Devise configurations for switches and routers with intermediate to advanced settings.
- Use Variable Length Subnet Mask and CIDR skills to address the enterprise network.
- Set up and revise various industry standard routing protocols.
- Use console and telnet connections to configure switches and routers.
- Test advanced security settings, e.g. access control lists, port security, and authentication.
- Analyze suboptimal conditions on operating networks by using advanced troubleshooting techniques.
- Setup TFTP servers as a means to copy device operating systems to the device flash memory and used for backing up configuration data.
- Utilize advance system commands
- Set up and configure WAN connectivity including HDLC, PPP, and Frame Relay.

Instructional Methods Employed in this Course

- Lecture and reading assignments
- Hands-on exercises and labs
- Research

- Student presentations
- Practical application of theory and skills in authentic projects
- Build on prior knowledge and experience of students to enhance richness of class activities

Information Resources for this Course



Textbook

Reid A., Lorenz J., Schmidt C., (2008) Introducing Routing and Switching in the Enterprise. Cisco Press.

(Two book set: Part 1 Concepts, Part 2 Labs (in-class exercises))



Other Materials

TBA



Web Site Readings

TBA

Table/Topics & Assignments

Types of Assignments:

Lecture -

Considered Lecture Hours

Classroom Discussion -

Considered Lecture Hours

In Class Critique -

Considered Lecture Hours

Delivering Oral Presentations -

Considered Lecture Hours

In Class (IC) Exercise -

Considered Lecture Hours

Reading -

Considered Homework (HW), work done outside of class

WebClass lesson (non-online courses) -

Considered HW, work done outside of class

Lab Work -

Considered Lab Hours

Quiz, Midterm or Final -

Considered Lecture Hours

| Week 1 | | | | | | |
|--------------|--|-----------|-----------|----------|-------------|---------------------|
| Type | Topic/Description | LEC Hours | LAB Hours | HW Hours | Point Value | Due |
| LEC 1A | Networking in the Enterprise/Enterprise Network Infrastructure | 3 | -- | -- | -- | |
| IC EX 1A | Ch. 1&2 IA | 1 | -- | -- | 20 | End week 2 |
| HW 1A | Read Chapters 1&2 (60 pages) Evaluated by HW 1B | -- | -- | 6 | -- | |
| HW 1B | Chapter 1&2 Review (24 questions) | -- | -- | 2 | 20 | Beginning of week 2 |
| Total Week 1 | | 4 | | 8 | 40 | |
| Week 2 | | | | | | |
| Type | Topic/Description | LEC Hours | LAB Hours | HW Hours | Point Value | Due |
| LEC 2A | Switching in an Enterprise Network | 3 | -- | -- | -- | |
| IC EX 2A | Ch. 3 IA | 1 | -- | 3 | 20 | End week2 |
| HW 2A | Read Chapter 3 (37 pages) Evaluated by HW 2B | -- | -- | 4 | -- | |
| HW 2B | Chapter 3 Review (15 questions) | -- | -- | 1 | 30 | Beginning of week 3 |
| Total Week 2 | | 4 | -- | 8 | 50 | |
| Week 3 | | | | | | |
| Type | Topic/Description | LEC Hours | LAB Hours | HW Hours | Point Value | Due |
| LEC 3A | Addressing in an Enterprise Network | 3 | -- | -- | -- | |
| IC EX 3A | Ch. 4 IA | 1 | -- | 3 | 20 | End week 4 |
| HW 3A | Read Chapter 4 (38 pages) Evaluated by HW 3B | -- | -- | 4 | -- | |
| HW 3B | Chapter 4 Review (15 questions) | -- | -- | 1 | 30 | Beginning of week 4 |
| Total Week 3 | | 4 | -- | 8 | 50 | |
| Week 4 | | | | | | |
| Type | Topic/Description | LEC Hours | LAB Hours | HW Hours | Point Value | Due |
| LEC 4A | Routing with a Distance Vector Protocol | 3 | -- | -- | -- | |

| | | | | | | |
|--------------|--|----|----|----|----|------------------------|
| IC EX 4A | Ch. 5, Quiz 1 (Ch. 1-4) | -- | -- | -- | 30 | |
| IC EX 4B | Ch. 5 IA | 1 | -- | 3 | 30 | End week 4 |
| HW 4A | Read Chapter 5 (42 pages) Evaluated by HW 4B | -- | -- | 4 | -- | |
| HW 4B | Chapter 5 Review (15 questions) | -- | -- | 1 | 30 | Beginning of week 5 |
| Total Week 4 | | 4 | -- | 8 | 90 | |

Week 5

| Type | Topic/Description | LEC Hours | LAB Hours | HW Hours | Point Value | Due |
|--------------|---|--------------|--------------|-------------|----------------|------------|
| LEC 5A | Review & Discussion (Chapters 1-5) | 2 | -- | -- | -- | |
| IC EX 5A | Makeup IC EX 1-5 | 1 | -- | -- | 20 | End week 6 |
| HW 5A | Chapter Reviews 1-5 (187 pages) Evaluated by EXAM 5A | -- | -- | 8 | -- | |
| EXAM 5A | Midterm / LASA 1 | 1 | -- | -- | 250 | End week 5 |
| Total Week 5 | | 4 | -- | 8 | 270 | |

Week 6

| Type | Topic/Description | LEC Hours | LAB Hours | HW Hours | Point Value | Due |
|--------------|--|--------------|--------------|-------------|----------------|------------------------|
| LEC 6A | Routing with a Link- State Protocol | 3 | -- | -- | -- | |
| IC EX 6A | Ch. 6, IA | 1 | -- | 3 | 20 | End week 6 |
| HW 6A | Read Chapter 6 (38 pages) Evaluated by HW 6B | -- | -- | 4 | -- | |
| HW 6B | Chapter 6 Review (12 questions) | -- | -- | 1 | 30 | Beginning of week 7 |
| Total Week 6 | | 4 | -- | 8 | 50 | |

Week 7

| Type | Topic/Description | LEC Hours | LAB Hours | HW Hours | Point Value | Due |
|----------|--|--------------|--------------|-------------|----------------|------------|
| LEC 7A | Implementing Enterprise WAN Links | 3 | -- | -- | -- | |
| IC EX 7A | Ch. 7 IA | 1 | -- | 4 | 20 | End week 8 |
| HW 7A | Read Chapter 7 (28 pages) Evaluated by HW 7B | -- | -- | 3 | -- | |

| HW 7B | Chapter Review (10 questions) | -- | -- | 1 | 30 | Beginning of week 8 |
|----------------|---|--------------|--------------|-------------|----------------|------------------------|
| Total Week 7 | | 4 | -- | 8 | 50 | |
| Week 8 | | | | | | |
| Type | Topic/Description | LEC Hours | LAB Hours | HW Hours | Point Value | Due |
| LEC 8A | Access Control Lists | 3 | -- | -- | -- | |
| IC EX 8A | Quiz 2 (Ch. 6&7) | -- | -- | -- | 30 | |
| IC EX 8A | Ch. 8 IA | 1 | -- | 3 | 30 | End week 8 |
| HW 8A | Read Chapter 8 (38 pages) Evaluated by HW 8B | -- | -- | 4 | -- | |
| HW 8B | Chapter Review (14 questions) | -- | -- | 1 | 30 | Beginning of week 9 |
| Total Week 8 | | 4 | -- | 8 | 90 | |
| Week 9 | | | | | | |
| Type | Topic/Description | LEC Hours | LAB Hours | HW Hours | Point Value | Due |
| LEC 9A | Troubleshooting an Enterprise Network | 3 | -- | -- | -- | |
| IC EX 9A | Ch. 9, IA | 1 | -- | 1 | 30 | End week 10 |
| HW 9A | Read Chapter 9 (48 pages) Evaluated by HW 9B | -- | -- | 5 | -- | |
| HW 9B | Chapter Review (19 questions) | -- | -- | 2 | 30 | End week 10 |
| Total Week 9 | | 4 | -- | 8 | 60 | |
| Week 10 | | | | | | |
| Type | Topic/Description | LEC Hours | LAB Hours | HW Hours | Point Value | Due |
| LEC 10A | Review Chapters 6-9 | 2 | -- | -- | -- | |
| IC EX 10A | IC EX Catch-Up | 1 | -- | 2 | -- | End week10 |
| HW 10A | Chapter Reviews 6-9 (152 pages). Evaluated in EXAM 10A | -- | -- | 6 | -- | |
| EXAM 10A | Final / LASA 2 | 1 | -- | -- | 250 | End week10 |
| Total Week 10 | | 4 | -- | 8 | 250 | |

Course Hours Summary

| Week | Topic | LEC Hours | LAB Hours | HW Hours |
|-------|--|-----------|-----------|----------|
| 1 | Networking in the Enterprise/Enterprise Network Infrastructure | 4 | 0 | 8 |
| 2 | Switching in an Enterprise Network | 4 | 0 | 8 |
| 3 | Addressing in an Enterprise Network | 4 | 0 | 8 |
| 4 | Routing with a Distance Vector Protocol | 4 | 0 | 8 |
| 5 | Course Review / Mid Term | 4 | 0 | 8 |
| 6 | Routing with a Link-State Protocol | 4 | 0 | 8 |
| 7 | Implementing Enterprise WAN Links | 4 | 0 | 8 |
| 8 | Access Control Lists | 4 | 0 | 8 |
| 9 | Troubleshooting an Enterprise Network | 4 | 0 | 8 |
| 10 | Course Review / Final | 4 | 0 | 8 |
| Total | | 40 | 0 | 80 |

Table/Point Breakdown

| Week | Assignment | Possible Points | Percent of Grade |
|-------|-----------------|-----------------|------------------|
| 1 | IC EX 1 | 20 | 2% |
| 1 | Chapter Review | 20 | 2% |
| 2 | IC EX 2 | 20 | 2% |
| 2 | Chapter Review | 30 | 3% |
| 3 | IC EX 3 | 20 | 2% |
| 3 | Chapter Review | 30 | 3% |
| 4 | Quiz 1 | 30 | 3% |
| 4 | IC EX 4 | 30 | 3% |
| 4 | Chapter Review | 30 | 3% |
| 5 | IC EX 5 | 20 | 2% |
| 5 | Mid Term/LASA 1 | 250 | 25% |
| 6 | IC EX 6 | 20 | 2% |
| 6 | Chapter Review | 30 | 3% |
| 7 | IC EX 7 | 20 | 2% |
| 7 | Chapter Review | 30 | 3% |
| 8 | Quiz 2 | 30 | 3% |
| 8 | IC EX 8 | 30 | 3% |
| 8 | Chapter Review | 30 | 3% |
| 9 | IC EX 9 | 30 | 3% |
| 9 | Chapter Review | 30 | 3% |
| 10 | Final/LASA 2 | 250 | 25% |
| Total | | 1000 | 100% |

Your Grades for this Course

Your final grade for this course will be based on an assessment by the Instructor of your performance on a number of course activities, which may include objective tests, classroom exercises, laboratory demonstrations, project papers, or other types of activities. The chart below indicates in what activities you will engage, how many possible points can be earned for each activity, and the percentage of your final grade that will be accounted for by each activity.

Students in this course should be graded following Coleman University assessment practices and policies. A point system is used in the University to indicate student performance on various required activities or projects. For this course, it is recommended that points be distributed as follows:

Coleman University Grade Assignment Policy:

| Percent | Letter Grade | Grade Points |
|-------------|--------------|--------------|
| 94-100 | A | 4 |
| 90-93 | A- | 3.67 |
| 87-89 | B+ | 3.33 |
| 84-86 | B | 3 |
| 80-83 | B- | 2.67 |
| 77-79 | C+ | 2.33 |
| 74-76 | C | 2 |
| 70-73 | C- | 1.67 |
| 67-69 | D+ | 1.33 |
| 64-66 | D | 1 |
| 60-63 | D- | 0.67 |
| N/A | INC | 0 |
| N/A | W | 0 |
| 60 or above | CR | 0 |
| 59 or below | NC | 0 |
| N/A | I | 0 |
| N/A | W | 0 |
| N/A | AU | 0 |
| N/A | TR | 0 |
| N/A | WV | 0 |

| Legend | |
|----------------|-----------------------|
| CR = Credit | NC = No Credit |
| I = Incomplete | W = Course Withdrawal |
| AU = Audit | TR = Transfer Credit |

Academic Accommodation / Adjustment Policy:

In accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA), Coleman University offers accommodations to students with documented physical, psychological, and/or cognitive disabilities. Coleman University will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to offer equal educational opportunities to qualified disabled individuals.

To qualify for an academic accommodation under ADA, the student must provide adequate documentation of a disability. Students seeking academic accommodations should contact the campus ADA Coordinator at 858-966-3953 or via email at ada@coleman.edu. The ADA Coordinator will review the documentation provided and verify ADA coverage. Students covered under ADA must meet with the ADA Coordinator at the beginning of every term to determine the appropriate academic accommodations. Failing to meet with the ADA Coordinator at the beginning of every term may impact the availability of accommodations.

After the academic accommodations have been determined, the students' instructors will be notified by the ADA Coordinator. If any problems or concerns regarding the provision of accommodations occur, the student must inform the ADA Coordinator. If the student feels accommodation is not being made appropriately, the student may follow the published Student Grievance Procedures.