

TCOM 515
IP Routing: Lecture and Lab
George Mason University
Spring 2008

Course Description:

This course will cover the various IP routing technologies used in current data communication networks. Topics covered in this class include static routes, RIP, OSPF, BGP, and route redistribution and filters. The class includes lectures and labs; the labs will provide hands-on exercises to reinforce topics covered in the lectures.

Instructors:

Wei Wu (lectures and lab session 1) Email: tcomclass@gmail.com
Cong Tham (lab sessions 2 and 3) Email: tcom.gmu@gmail.com
Office Hours: Room 235 ST2 (Appointments by email)

TA:

Usman Gohar Email: ugohar@gmu.edu
Office Hours: TBA

Course Meeting Time: 7:20-10:00pm

Lectures: Mondays in IN 136

Labs: Monday, Tuesday or Thursday in Johnson Center Network Lab (10G-C)

Course Texts

Required:

1. Routing TCP/IP Volume I, 2nd Edition, Jeff Doyle and Jennifer Carroll, ISBN: 1587052024
2. BGP4 Inter-Domain Routing in the Internet, John W. Stewart ISBN: 0-201-37951-1

Supplemental:

Routing TCP/IP Volume II, Jeff Doyle ISBN: 1-57870-089-2

Course Grade Breakdown

Lab: 40%

Midterm: 30%

Final: 30%

The lowest lab grade will be dropped

Midterm and Final are based on assigned reading, lectures, and labs.

GMU Honor Code

<http://www.gmu.edu/catalog/apolicies/#Anchor13>

“Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work”

Course Schedule (Tentative)

Class #	Topic	Required Reading
1 1/28	Lecture 1: IP & Static Routing Lecture	Chapters 1 & 3
2 2/4,2/5,2/7	Lab 1: Static Routing	
3 2/11	Lecture 2: Dynamic Routing, RIP Lecture	Chapters 4,5 & 6
4 2/18,2/19,2/21	Lab 2: RIP	
5 2/25	Lecture 3: OSPF Lecture	Chapter 8
6 3/3,3/4,3/6	Lab 3: OSPF	
7 3/17	Lecture 4: EIGRP Lecture/Midterm Review	Chapter 7
8 3/24	Midterm	
9 3/31,4/1,4/3	Lab 4: EIGRP	
10 4/7	Lecture 5: BGP Lecture	Stewart BGP4 book
11 4/14,4/15,4/17	Lab 5: BGP	
12 4/21	Lecture 6: Redistribution, Default Routes, and Route Filtering	Chapter 11,12, & 13
13 4/28,4/29,5/1	Lab 6: Redistribution	
14 5/5	Final Review	
15 5/12	Final	

Classroom Dates:

1/28, 2/11, 2/25, 3/17, 3/24, 4/7, 4/21, 5/5, 5/12

Lab Dates:

Session 1 2/4, 2/18, 3/3, 3/31, 4/14, 4/28

Session 2 2/5, 2/19, 3/4, 4/1, 4/15, 4/29

Session 3 2/7, 2/21, 3/6, 4/3, 4/17, 5/1

Lecture and labs

Lecture PowerPoint slides and lab procedures will be posted online or emailed prior to class/lab.

Lab Preparation

Please print out and read the Lab procedures before coming to class. I also recommend bringing a USB flash drive or floppy disk to save your router configuration and output to be used in the lab reports.

Lab Reports

- Lab attendance is mandatory!
- Lab Reports are due by **7:20pm at the beginning** of the next lecture. Lab Reports can be turned in as hardcopy at class or may be emailed to the instructors and TA before the start of the lecture.

- Lab reports submitted must be individual reports; lab partners may use same lab outputs, but not submit the same report. See GMU honor code.
- You must include your last name in the document's name if you email it.
- Put your name, lab session, and lab partner(s) at the beginning of the document.
- Identify the router name you were working on for each lab.
- Lab reports can be done using the Lab document with you answers inserted in the document but visibly different (underline, color, bold, italics, etc). You may also draft your lab report from scratch.
- You must answer all questions in the lab, fill out any tables, and draw any diagrams or any extra work that is requested in the lab.
- Outputs are very important for lab reports, please include outputs from labs to justify answers.
- Labs will be decremented 10% for each day late.
- You must also answer the 3 questions below for every lab.

Lab Questions: Answer these questions in addition to all questions contained within the lab itself. **2-3 sentence answers** should suffice.

1. What was the most important piece of knowledge you took away from this lab?
2. What new command did you find most useful and why?
3. Identify at least one problem you experienced in this lab. How did you figure out the problem? How did you resolve it?

Links

[IP addressing and Subnetting - PDF reading and exercises](#)

[IP Subnet Masking chart](#)

[RFC 1264 - IETF Routing Protocol Requirements](#)

[RFC 1058 - Routing Information Protocol](#)

[RFC 1721 - RIP Version 2 Protocol Analysis](#)

[RFC 2453 - RIP Version 2](#)

[RFC 2328 - OSPF Version 2](#)

[OSPF Design Guide](#)

[EIGRP White Paper](#)

[RFC 1771 - BGP](#)