

TCOM 515
IP Routing: Lecture and Lab
George Mason University
Fall 2022

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, EIGRP, 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.

Instructor:

Wei Wu

Email: wwu1@gmu.edu

Office Hours: Room 3708 Nguyen Engineering Building (Appointments by email)

Course Meeting Time:

Lectures and lab section 1: Mondays 4:30 – 7:10pm

Lecture Location: Research Hall Room 201

Lab Location: Johnson Center Network Lab (G10C)

**Class will be hybrid, some classes are in person, some are virtual. Virtual classes will use this link,

<https://vmware.zoom.us/j/93946457077?pwd=QjJuTEY1T2xXeUdTbUxMQms0bGI5QT09>

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

Software requirements:

Remote Desktop Client Software – students need to use remote desktop client to access the lab environment. Microsoft Remote Desktop is recommended, it is available for Windows and MacOS.

Course Grade Breakdown

Lab: 33.3%

Midterm: 33.3%

Final: 33.4%

The lowest lab grade will be dropped. Midterm and Final are based on assigned reading, lectures, and labs.

Midterm and Final Exam cover topics from reading, lectures, and labs. Respondus Lockdown Browser will be used for the 2 exams.

Grading Scale

97 – 100% A+
 93 – 96% A
 90 – 92% A-
 87 – 89% B+
 83 – 86% B
 80 – 82% B-
 70 – 79% C

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 8/22	Lecture 1: Introduction and & Static Routing	Chapters 1 & 3
3 8/29	Lab 1: Static Routing	
4 9/5	No Class - Labor Day	
5 9/12	Lecture 2: Dynamic Routing, RIP Lecture	Chapters 4,5 & 6
6 9/19	Lab 2: RIP	
7 9/26	Lecture 3: OSPF	Chapter 8
8 10/3	Lab 3: OSPF	
9 10/11*	Lecture 4: EIGRP Lecture/Midterm Review	
10 10/17	Midterm	Chapter 7
11 10/24	Lab 4: EIGRP	
12 10/31	Lecture 5: BGP	Stewart BGP4 book
13 11/7	Lab 5: BGP	
14 11/14	Lecture 6: Redistribution, Default Routes, and Route Filtering	Chapter 11,12, & 13
15 11/21	Lab 6: Redistribution	
16 11/28	Final Review and TOPIC TBD	
17 12/5	Reading Day	
18 12/12	Final Exam	

Fall break, Monday classes moved to Tuesday

Lecture and labs

All lecture PowerPoint slides and lab guides will be posted online on Blackboard. Lecture slides are available under the Course Content tab, and lab guides are available under the Assignments tab.

Lab Preparation

- Please read the lab procedures before attending the lab.

- Students need to download and install remote desktop client software on their computer. This will be used to access the lab environment.
- The router configuration and outputs need to be used in the lab reports. The lab outputs should be copied directly from the lab.

Lab Reports

- **Lab attendance is mandatory! You will get 0 if you do not attend the lab.**
- Lab reports must be submitted to Blackboard by **7:20pm at the beginning** of the next lecture. Submissions are under the Assessments tab in BlackBoard.
- Lab report grade will be decremented 10% for each day late.
- **Lab reports submitted must be individual reports; lab partners may use same lab outputs, but not submit the same report. See GMU honor code.**
- Put your name, lab session, and lab partner(s) at the beginning of the report.
- Identify the router name for the lab report.
- Lab reports can be done using the Lab document with your 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.
- 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?

Additional 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 2453 - RIP Version 2](#)

[RFC 2328 - OSPF Version 2](#)

[OSPF Design Guide](#)

[EIGRP White Paper](#)

[RFC 4271 - BGP](#)