

**TCOM 515**  
**IP Routing: Lecture and Lab**  
**George Mason University**  
**Spring 2019**

**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.

**Instructors:**

Wei Wu - lectures and labs (Mondays 7:20-10pm)

Email:wwu1@gmu.edu

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

**TA:**

TBA

**Course Meeting Time:**

Mondays: 7:20 – 10:00pm, lectures are in Nguyen Engineering Building 2608, labs are in Johnson Center Network Lab (G10C)

**Course Texts:**

**Required:**

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

**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.\*

**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)

<b>Class #</b>	<b>Topic</b>	<b>Required Reading</b>
0 1/21	<b>MLK Holiday – no class</b>	
1 1/28	Lecture 1: IP & Static Routing Lecture	Chapters 1 & 3
2 2/4	Lab 1: Static Routing	
3 2/11	Lecture 2: Dynamic Routing, RIP Lecture	Chapters 4,5 & 6
4 2/18	Lab 2: RIP	
5 2/25	Lecture 3: OSPF	Chapter 8
6 3/4	Lab 3: OSPF	
7 3/11	<b>Spring Break- no class</b>	
8 3/18	Lecture 4: EIGRP Lecture/Midterm Review	Chapter 7
9 3/25	<b>Midterm</b>	
10 4/1	Lab 4: EIGRP	
11 4/8	Lecture 5: BGP	Stewart BGP4 book
12 4/15	Lab 5: BGP	
13 4/22	Lecture 6: Redistribution, Default Routes, and Route Filtering	Chapter 11,12, & 13
14 4/29	Lab 6: Redistribution	
15 5/6	Final Review	
16 5/13	<b>Final</b>	

## Lecture and labs

All lecture PowerPoint slides and lab guides are posted online on Blackboard under “Course Content” and “Assignments”.

## Lab Preparation

Please print out and read the lab procedures before coming to the lab. I recommend bringing a USB flash drive to save your router outputs to be used in the lab reports. You may also email lab outputs directly from the lab.

## Lab Reports

- **Lab attendance is mandatory! You will get 0 if you do not attend the lab.**
- Lab Reports are due by **7:20pm at the beginning** of the next lecture. Lab reports must be submitted via Blackboard under “Assessments”.
- **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 embed your last name in the lab report’s name.

- Put your name, lab session, and lab partner(s) at the beginning of the report.
- Identify the router name you were working on for each lab.
- 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.
- Lab report grade 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?

### **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](#)