TCOM 515  
IP Routing: Lecture and Lab  
George Mason University  
Spring 2009

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 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:  
TBA

Course Meeting Time: 4:30-7:10pm  
Lectures: Mondays in Robinson Hall A247  
Labs: Monday, Tuesday or Thursday in Johnson Center Network Lab (G10C)

Course Texts  
Required:  
2. BGP4 Inter-Domain Routing in the Internet, John W. Stewart ISBN: 0-201-37951-1

Supplemental:  

Course Grade Breakdown  
Lab: 30%  
Midterm: 35%  
Final: 35%  
*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)

<table>
<thead>
<tr>
<th>Class #</th>
<th>Date</th>
<th>Topic</th>
<th>Required Reading</th>
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<tr>
<td>1</td>
<td>8/31</td>
<td>Lecture 1: IP &amp; Static Routing Lecture</td>
<td>Chapters 1 &amp; 3</td>
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<td>2</td>
<td>9/3*, 9/8, 9/10</td>
<td>Lab 1: Static Routing</td>
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<td>3</td>
<td>9/14</td>
<td>Lecture 2: Dynamic Routing, RIP Lecture</td>
<td>Chapters 4, 5 &amp; 6</td>
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<td>4</td>
<td>9/21, 9/22, 9/24</td>
<td>Lab 2: RIP</td>
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<td>5</td>
<td>9/28</td>
<td>Lecture 3: OSPF Lecture</td>
<td>Chapter 8</td>
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<td>6</td>
<td>10/5, 10/6, 10/8</td>
<td>Lab 3: OSPF</td>
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<tr>
<td>7</td>
<td>10/13**</td>
<td>Lecture 4: EIGRP Lecture/Midterm Review</td>
<td>Chapter 7</td>
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<td>8</td>
<td>10/19</td>
<td>Midterm</td>
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<tr>
<td>9</td>
<td>10/26, 10/27, 10/29</td>
<td>Lab 4: EIGRP</td>
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<td>10</td>
<td>11/2</td>
<td>Lecture 5: BGP Lecture</td>
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<td>11</td>
<td>11/9, 11/10, 11/12</td>
<td>Lab 5: BGP</td>
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<td>12</td>
<td>11/16</td>
<td>Lecture 6: Redistribution, Default Routes, and Route Filtering</td>
<td>Chapter 11, 12, &amp; 13</td>
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<tr>
<td>13</td>
<td>11/23, 11/24, 11/19***</td>
<td>Lab 6: Redistribution</td>
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<td>14</td>
<td>11/30</td>
<td>Lecture 7: IPv6/Final Review</td>
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<tr>
<td>15</td>
<td>12/14</td>
<td>Final</td>
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* Date changed due to Labor Holiday
** Date changed due to Columbus Holiday
*** Date changed due to Thanksgiving Holiday

**Classroom Lecture Dates:**
- 8/23, 9/14, 9/28, 10/13, 10/19*, 11/2, 11/16, 11/30, 12/14*
  *Midterm and Final will be held in different room.

**Lab Dates:**
- Session 1: 9/3, 9/21, 10/5, 10/26, 11/9, 11/23
- Session 2: 9/8, 9/22, 10/6, 10/27, 11/10, 11/24
- Session 3: 9/10, 9/24, 10/8, 10/29, 11/12, 11/19

**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 **4:30pm at the beginning** of the next lecture. Lab Reports can be turned in as hardcopy at class or may be emailed to the instructors copying the 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.
- 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?

**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 1721 - RIP Version 2 Protocol Analysis](#)
- [RFC 2453 - RIP Version 2](#)
- [RFC 2328 - OSPF Version 2](#)
- [OSPF Design Guide](#)
- [EIGRP White Paper](#)
- [RFC 4271 - BGP](#)