TCOM 515
IP Routing: Lecture and Lab
George Mason University
Fall 2011

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 3708 New Engineering Building (Appointments by email)

TA:
TBA

Course Meeting Time: 4:30-7:10pm
Lectures: Mondays in Robinson B205
Labs: Monday or Tuesday (4:30-7:10pm) or Wednesday (7:20-10:00pm) in Johnson Center Network Lab (G10C)

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

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.*

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
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“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)

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<tr>
<th>Class #</th>
<th>Date</th>
<th>Topic</th>
<th>Required Reading</th>
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<td>1</td>
<td>8/29</td>
<td>Lecture 1: IP &amp; Static Routing Lecture</td>
<td>Chapters 1 &amp; 3</td>
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<td>2</td>
<td>9/5*,9/6,9/7</td>
<td>Lab 1: Static Routing</td>
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<td>3</td>
<td>9/12</td>
<td>Lecture 2: Dynamic Routing, RIP Lecture</td>
<td>Chapters 4,5 &amp; 6</td>
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<td>4</td>
<td>9/19,9/20,9/21</td>
<td>Lab 2: RIP</td>
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<td>5</td>
<td>9/26</td>
<td>Lecture 3: OSPF Lecture</td>
<td>Chapter 8</td>
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<td>6</td>
<td>10/3,10/4,10/5</td>
<td>Lab 3: OSPF</td>
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<td>7</td>
<td>10/11** (Tuesday)</td>
<td>Lecture 4: EIGRP Lecture/Midterm Review</td>
<td>Chapter 7</td>
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<td>8</td>
<td>10/17</td>
<td>Midterm</td>
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<tr>
<td>9</td>
<td>10/24,10/25,10/26</td>
<td>Lab 4: EIGRP</td>
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<td>10/31</td>
<td>Lecture 5: BGP Lecture</td>
<td>Stewart BGP4 book</td>
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<td>11/7,11/8,11/9</td>
<td>Lab 5: BGP</td>
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<td>11/14</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>11/21,11/22,11/23***</td>
<td>Lab 6: Redistribution</td>
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<td>11/28</td>
<td>Lecture 7 :IPv6/Final Review</td>
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<td>15</td>
<td>12/13 (Tuesday)</td>
<td>Final</td>
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* Date changed due to Labor Holiday ➔ask class about options
** Date changed due to Columbus Holiday, class on Tuesday
*** Thanksgiving Holiday ➔ask class about options

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 both 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 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.
• 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 2453 - RIP Version 2
RFC 2328 - OSPF Version 2
OSPF Design Guide
EIGRP White Paper
RFC 4271 - BGP