Richland College  
School of Engineering, Business, and Technology  
972-238-6210  

CCNP R & S ROUTE: Implementing IP Routing  

ITCC 2454.83701  

Spring 2015 | 4 credit hours  

INSTRUCTOR: Terry Ting  
PHONE: 972-238-6281  
OFFICE: D229  
OFFICE HOURS: 8:30 a.m. – 4:30 p.m. Mon. – Fri.  
E-MAIL ADDRESS: tting@dccc.edu  
CLASS MEETING TIME: January 21 – March 18, 2015  
Room D105  
Mon. & Wed. 5:30 p.m. – 8:25 p.m. Lecture  
8:30 p.m. – 11:05 p.m. Lab  
DROP DATE: February 27, 2015  

THE INSTRUCTOR RESERVES THE RIGHT TO AMEND A SYLLABUS AS NECESSARY.

I. COURSE DESCRIPTION:  
Create an efficient and expandable enterprise network by installing, configuring, monitoring, and troubleshooting network infrastructure equipment (especially routers such as Cisco ISRs) according to the Campus Infrastructure module in the Enterprise Composite Network model. Topics include how to configure EIGRP, OSPF, and BGP routing protocols and how to manipulate and optimize routing updates between these routing protocols. Other topics include multicast routing, IPv6 and DHCP configuration. Licensing/Certification Agency: Cisco Corporation. (3 lec., 3 lab)

II. COURSE PREREQUISITES:  
ITCC 1477, ITCC 1478, ITCC 2476 and ITCC 2477 or CCNA certification or instructor’s permission.

III. REQUIRED/RECOMMENDED COURSE MATERIALS:  

IV. COURSE OBJECTIVES:  
This course is designed for students seeking careers in enterprise networking. It teaches students skills in planning, implementing, securing, maintaining, and troubleshooting. Students will learn how to plan, configure, and verify the implementation of complex enterprise LAN and WAN routing solutions using a range of routing protocols in IPv4 and IPv6 environments. Practical experience is gained through hands-on labs.
The CCNP R&S ROUTE: Implementing Cisco IP Routing course teaches the knowledge and skills that will enable the implementation of scalable and highly secure Cisco routers. This course is aligned with the CCNP R&S ROUTE 300-101 certification exam.

This course is also aligned with the Implementing Cisco IP Routing (ROUTE) Foundation Learning Guide from Cisco Press.

V. LEARNING OUTCOMES:
Upon completion of this course, the student will be able to perform tasks including:
1. Implement appropriate technologies to build a scalable routed network.
2. Build campus networks using multilayer switching technologies
3. Improve traffic flow, reliability, redundancy, and performance for campus LANs, routed and switched WANs, and remote access networks.
5. Troubleshoot an environment that uses Cisco routers and switches for multiprotocol client hosts and services.

VI. COURSE OUTLINE:
Chapter 1: Basic Network and Routing Concepts
Chapter 2: EIGRP Implementation
Chapter 3: OSPF Implementation
Chapter 4: Manipulating Routing Updates
Chapter 5: Path Control Implementation
Chapter 6: Enterprise Internet Connectivity
Chapter 7: BGP Implementation
Chapter 8: Routers and Routing Protocol Hardening

VII. EVALUATION PROCEDURES:
Attendance and teamwork ........ 10%
On-line chapter exams .......... 15%
On-line final exam .............. 20%
Lab exercises .................... 25%
Skills-based final exam ........ 30%

Total ............................. 100%

VIII. EXAMS AND ASSIGNMENTS:
There is an end-of-chapter exam for each of the chapters. These exams are required. At the end of the course, all students will be required to take a comprehensive final exam. All assignments will involve hands-on labs. Specific and representative labs will be announced.
IX. **GRADING SCALE:**  
The final course grade is determined as follows:  
- **A** ................. 90 – 100%  
- **B** .................. 80 – 89%  
- **C** .................. 70 – 79%  
- **D** .................. 60 – 69%  
- **F** ................... 59% and below

X. **CLASSROOM POLICIES:**  
**Teamwork:**  
As in any organization, students should portray themselves as capable of working as a team.  
The lab setting is such that students will work as teams of various sizes in engaging the  
assigned labs. Cooperation and agreements are expected for the successful performance of  
the team.

**Class Participation:**  
This is an important part of this course. Your active participation is required to ensure  
successful assimilation of the course content. You are expected to have read the material  
scheduled before coming to class. The time in class should ideally be spent on reviewing  
the curriculum, taking the on-line chapter tests and performing the scheduled lab  
assignments. The on-line curriculum can be accessed at any time via the Internet with your  
login and password. Plan for a full class time of group work, lab and lecture.

**Environment:**  
No food, drinks, or tobacco will be permitted in the classrooms. Students are expected to  
maintain proper classroom decorum at all times. Students are expected to provide their own  
individual ethical performance in compliance with the accepted Richland College policies.

XI. **ATTENDANCE POLICIES:**  
This class requires 100% attendance. You are expected to attend class regularly. Please  
notify me if you will be absent. If you are unable to complete this course, you must  
withdraw by **Friday, February 27, 2015**. A grade of **W** will be assigned.

Withdrawing from a course is a formal procedure, which you must initiate. I cannot do it  
for you. If you stop attending and do not withdraw from the class, you will receive a grade  
of **F**.

Students sometimes drop courses when help is available that would enable them to continue  
and finish them. I hope that you will discuss your plans or options with me if you are  
considering withdrawing from this course.

XII. **INSTITUTIONAL POLICIES:**  
Refer to the Richland College website: [www.richlandcollege.edu](http://www.richlandcollege.edu) or to  
[www.richlandcollege.edu/syllabusinfo/syllabiInformation.pdf](http://www.richlandcollege.edu/syllabusinfo/syllabiInformation.pdf).
<table>
<thead>
<tr>
<th>Week</th>
<th>Day</th>
<th>Date</th>
<th>Module</th>
<th>Topic</th>
<th>1-On-Line Reading¹</th>
<th>2-On-Line Exam</th>
<th>3-Required Labs</th>
<th>4-Optional Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>W</td>
<td>1/21</td>
<td>1</td>
<td>Basic Network and Routing concepts</td>
<td>1</td>
<td>1</td>
<td>1-1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>1/26</td>
<td>2</td>
<td>EIGRP Implementation</td>
<td>2</td>
<td>2</td>
<td>2-1, 2-2, 2-3, 2-4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>1/28</td>
<td>3</td>
<td>OSPF Implementation</td>
<td>3</td>
<td>3</td>
<td>3-1, 3-2, 3-3</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>2/2</td>
<td>4</td>
<td>Manipulating Routing Updates</td>
<td>4</td>
<td>4</td>
<td>4-1, 4-2, 4-3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>2/4</td>
<td>5</td>
<td>Path Control Implementation</td>
<td>5</td>
<td>5</td>
<td>5-1, 5-2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>2/9</td>
<td>6</td>
<td>Enterprise Internet Connectivity</td>
<td>6</td>
<td>6</td>
<td>6-1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>2/11</td>
<td>7</td>
<td>BGP Implementation</td>
<td>7</td>
<td>7</td>
<td>7-1, 7-2, 7-3, 7-4, 7-5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>2/16</td>
<td>8</td>
<td>Routers and Routing Protocol Hardening</td>
<td>8</td>
<td>8</td>
<td>8-1, 8-2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>2/18</td>
<td>8</td>
<td>Complete all tests and labs</td>
<td>1-8</td>
<td>1-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>M</td>
<td>2/24</td>
<td>1-8</td>
<td>Complete all tests and labs</td>
<td>1-8</td>
<td>1-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>2/26</td>
<td>1-8</td>
<td>Complete all tests and labs</td>
<td>1-8</td>
<td>1-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>3/2</td>
<td>1-8</td>
<td>Complete all tests and labs</td>
<td>1-8</td>
<td>1-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>3/4</td>
<td>1-8</td>
<td>Complete all tests and labs</td>
<td>1-8</td>
<td>1-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>3/9</td>
<td>---</td>
<td>Spring Break</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>3/11</td>
<td>---</td>
<td>Spring Break</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>3/16</td>
<td>1-8</td>
<td>On-Line Final / Hands-On Final</td>
<td>1-8</td>
<td>1-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>3/18</td>
<td>1-8</td>
<td>On-Line Final / Hands-On Final</td>
<td>1-8</td>
<td>1-8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. Students should read the chapter before coming to class.
2. The curriculum version is CCNP R&S ROUTE: Implementing IP Routing, version 7.0