Course Title – Cisco Exploration 2 – Routing Protocols and Concepts
Course Prefix and Number - ITCC 1404
Department - Computer Science Division - Tech & Bus
Course Type: (check one)
☐ Academic General Education Course (from ACGM – but not in WCJC Core)
☐ Academic WCJC Core Course
☒ WECM course (This course is a Special Topics or Unique Needs Course: Y ☒ or N ☐)

Semester Credit Hours #: Lecture hours#: Lab/other hours # 4:3:3

Equated Pay hours for course – 4.5

Course Catalog Description – This course describes the architecture, components, and operation of routers, and explains the principles of routing and routing protocols. Students analyze, configure, verify, and troubleshoot the primary routing protocols RIPv1, RIPv2, EIGRP, and OSPF. Recognize and correct common routing issues and problems. Model and analyze routing processes.

Prerequisites/Corequisites - Grade of C or higher in ITCC 1401

Approvals – the contents of this document have been reviewed and are found to be accurate.

Prepared by Donna Schilling
Signature
Date 11/23/2009

Department Head Stephanie Dees
Signature
Date 11/23/2009

Division Chair Stephanie Dees
Signature
Date 11/23/2009

Vice President of Instruction or Dean of Vocational Instruction
Signature
Date 12-1-09
I. Topical Outline – Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, clinical or other non lecture instruction):

- Describe the purpose, nature, and operations of a router
- Explain the critical role routers play in enabling communications across multiple networks
- Describe the purpose and nature of routing tables
- Describe how a router determines a path and switches packets
- Explain the route lookup process and determine the path packets will take in the network
- Configure and verify basic operations for a newly-installed router
- Describe the purpose of static routes and the procedure for configuring them
- Configure and verify static and default routing
- Describe the role of dynamic routing protocols and place these protocols in the context of modern network design
- Describe how metrics are used by routing protocols and identify the metric types used by dynamic routing protocols
- Identify the characteristics of distance vector routing protocols
- Describe the network discovery process of distance vector routing protocols using Routing Information Protocol (RIP)
- Describe the functions, characteristics, and operations of the RIPv1 protocol
- Compare and contrast classful and classless IP addressing
- Describe classful and classless routing behaviors in routed networks
- Design and implement a classless IP addressing scheme for a given network
- Describe the main features and operations of the Enhanced Interior Gateway Routing Protocol (EIGRP)
- Use advanced configuration commands with routers implementing EIGRP and OSPF
- Describe the basis features and concepts of link-state routing protocols
- Describe the purpose, nature, and operations of the Open Shortest Path First (OSPF) Protocol
- Configure and verify basic RIPv1, RIPv2, single area OSPF, and EIGRP operations in a small routed network
- Use router show and debug commands to troubleshoot common errors that occur in small routed networks
II. Course Learning Outcomes

<table>
<thead>
<tr>
<th>Course Learning Outcome</th>
<th>Method of Assessment</th>
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<tbody>
<tr>
<td>Install, configure, monitor, maintain, and troubleshoot a network router operating system</td>
<td>Skills Final; 70% of students will achieve a score no less than “3” according to the skills final rubric</td>
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III. Required Text(s), Optional Text(s) and/or Materials to be Supplied by Student.

No Required Text


IV. Suggested Course Maximum - 20

V. List any specific spatial or physical requirements beyond a typical classroom required to teach the course.

Classroom: computer for each student. Lab equipment: Cisco routers, Cisco switches, CSU/DSU, ISDN Routers, TSU, Networking Cables and a minimum of one computer per student.

VI. Course Requirements/Grading System – Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course

Module Tests, Lab Assignments, Homework Assignments, Comprehensive Final Exam and Comprehensive Skills Exam

- Skill Exam 23%
- Labs/Homework 30%
- Module Tests 22%
- Final Exam 25%

VII. Curriculum Checklist

☐ - Academic General Education Course (from ACGM – but not in WCJC Core)
  - No additional documentation needed

☐ - Academic WCJC Core Course
  - Attach the Core Curriculum Checklist, including the following:
    - Basic Intellectual Competencies
    - Perspectives
    - Exemplary Educational Objectives

☒ - WECM Courses
  - If needed, revise the Program SCANS Matrix & Competencies Checklist.