SYLLABUS

DIVISION: Business and Engineering Technology   **REVISED:** SPRING 2014

CURRICULA IN WHICH COURSE IS TAUGHT: IST, Information Systems Technology

COURSE NUMBER AND TITLE: **ITN 250 – Building Scalable Internetworks-Cisco**

CREDIT HOURS: 4 **HOURS/WK LEC:** 3 **HOURS/WK LAB:** 2 **LEC/LAB COMB:** 5

I.   **CATALOG DESCRIPTION:** ITN 250 - Includes instruction focusing on the characteristics of various routing protocol used in the TCP/IP networking environment, static routing, OSPF, IGRP, EIGRP, BGP, advanced IP addressing, and security. Course content examines various strategies for optimizing network routing performance.

II.   **RELATIONSHIP OF THE COURSE TO CURRICULA OBJECTIVES:** ITN 250 will address the following Information Technology Outcomes:
- Implement Information Technology skills required by software applications.
- Apply methodologies to stay current in IT offerings, trends and certifications.
- Apply analytical and problem solving skills for computer system design, planning and support.
- Design, code, test, debug, and document software needed for computer system implementation and maintenance.
- Apply current IT industry standards, protocols, and techniques.
- Use instructional applications and material which could lead towards industry certification.

Please Note: The overall Learner Outcomes from all of the course requirements for the A.A.S. Degrees in IT are more in-depth than those of the Career Studies Certificates. However, the IT courses that are the same in both the A.A.S. Degrees and the Certificate Programs carry the same Learner Outcomes and are identical in content. Please review the DCC Catalog or visit the DCC Web Site for more details.

III.   **REQUIRED BACKGROUND:**   ITN 157 or Approved by instructor

IV.   **COURSE CONTENT:**

• Explain routing in the enterprise network

• Implement and verify multicast forwarding using PIM

• Implement IPv6 in an enterprise network

• Implement and verify EIGRP operations

• Build a scalable multi-area network with OSPF

• Build a scalable network utilizing BGP

• Certification Exam: BSCI v3.0, Routing Protocols at Campus Edge, and 642-901

V. THE FOLLOWING GENERAL EDUCATION OBJECTIVES WILL BE ADDRESSED IN THIS COURSE. STUDENTS WILL:

X	Communication
X	Critical Thinking
	Cultural and Social Understanding Information Literacy
X	Personal Development
X	Quantitative Reasoning
X	Scientific Reasoning

VI. LEARNER OUTCOMES   VII. EVALUATION

Upon conclusion of this course the student will be able to define, discuss, and demonstrate knowledge in the following concepts.	
Manage IP Addresses and Broadcasts	Lab exercises and online test – Discuss the issues of IP address exhaustion. Explain the benefits of hierarchical addressing and routing. Demonstrate the ability to allocate IP addresses using VLSM. Demonstrate the ability to allocate IP addresses using IPv6. Configure a router to conserve IP addresses using IP Unnumbered, NAT, and DHCP.
Deployment and configuration of OSPF	Lab exercises and online test - Explain the concepts involved in using OSPF and its operation. Configure OSPF on the router in a single area. Monitor and troubleshoot the OSPF protocol while it is running. Design the layout of an OSPF internetwork and configure routers with OSPF using multiple areas.
Configuring EIGRP	Lab exercises and online test - Describe the operation of EIGRP. Configure EIGRP on the router. Troubleshoot and monitor EIGRP.
Managing Route Filtering and Policy Routing	Lab exercises and online test - Understand the reasons for filtering routing updates. Configure the router to use filtering techniques such as passive interfaces, null routes, and route filters. Use Route maps to implement routing policy. Activate policy-based routing in an internetwork. Verify and trouble-shoot policy routing.
Configuring Route Redistribution	Lab exercises and online test - Explain the benefits of route redistribution. Configure route redistribution using OSPF, EIGRP, IGRP, and RIP. Use static routes, default routes, and connected routes to control traffic. Redistribute classful routing protocols into classless protocols. Use one-way redistribution through a single border router. Use one-way redistribution through multiple border routers. Use two-way redistribution at multiple points. Monitor and trouble shoot redistribution.
Configuring BGP	Lab exercises and online test - Explain the operation of BGP. Understand the background of BGP. Explain BGP neighbor relationships. Understand the relationship between BGP, CIDR, and Aggregate addresses.
Configuring and Troubleshooting BGP	Lab exercises and online test - Configure BGP on the routers. Verify and Troubleshoot BGP Use scalability features of BGP. Configure BGP

	Routing Policy. Configure BGP to interact with IGP Use features of multi-homing