SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: CSCO-20155   Class Hours: 6   Lab Hours: 3   Lecture. Hours: 3   Dept.: Computer Systems Engineering Technology (CSET)

Course Title: Cisco Routing and Switching Essentials   Semester: Fall, Spring   Year: 2014

Course Description, Prerequisite, Corequisite:

Describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with RIPv1, RIPv2, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks.
Prerequisite: CSCO-105 or instructor's approval.

Course Objectives	Competencies
On successful completion of this course, the student should be able to:	On successful completion of this course, the student should be able to perform tasks related to the following:
• Understand the features of routing • Understand the information contained in the routing table • Understand the goals of routing protocols • Understand the characteristics of circuit switching and packet switching • Understand the bandwidths available for serial line connections • Understand the types of multiplexing	• 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 router operation for a newly installed router • Describe the purpose and procedure for configuring static routes

Course Objectives	Competencies
• Understand the stages in the process for starting and accessing a network router • Understand the characteristics of the Internetwork Operating System (IOS) command line interface (CLI) • Understand the the stages of a router startup • Understand the how to complete router system setup • Understand the the command used to log in to privileged mode on a router • Understand the features of Cisco Discovery Protocol (COP) • Understand the commands for enabling and disabling Cisco Discovery Protocol (COP) • Identify commands for displaying COP information	• 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