SYLLABUS

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

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

COURSE NUMBER AND TITLE: ITN 155 – Working at a Small to Medium Business or ISP-Cisco

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

I. CATALOG DESCRIPTION:

ITN 155 - Features an introduction to basic router configuration using Cisco IOS software. Course content includes system components, interface configuration, IP network design, troubleshooting techniques, configuration and verification of IP addresses, and router protocols.

II. RELATIONSHIP OF THE COURSE TO CURRICULA OBJECTIVES:

ITN 155 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 154

IV. COURSE CONTENT:

- WANs and Routers
- Cisco Router Components
- Cisco IOS CLI
- Basic Router Configuration
- Routing Protocols
- Network Troubleshooting

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.	
Configure WANs and Routers	Lab Exercises and online test - Allow student to visually inspect several models of routers and switches and have them document the role each would have in a WAN environment. Identify basic network devices used for a WAN. Identify the role of routers in a WAN environment
Identify Cisco Router Components	Lab Exercises and online test - Have student connect all the necessary cables to connect the router, switch, and PC so that communications can occur. Using commands provided by the router, have the student identify and describe RAM, ROM, Flash, NVRAM, and configuration registry entries. Describe router start-up sequence. Establish connectivity from a host to the appropriate network device to perform configuration tasks. Describe router elements (RAM, ROM, Flash, NVRAM, configuration register)
Configure Cisco IOS CLI	Lab Exercises and online test - Have student identify the running-config and the startup-config files and determine what each has as its purpose in the router. Have student create passwords and banners using the CLI of the router. Have student utilize the "?" for help on CLI commands and the keyboard shortcuts that are available. Manage configuration files from the privileged EXEC mode. Configure router passwords, identification and banner. Use the context-sensitive help facility. Use the command history and editing feature
Set up Basic Router Configuration	Lab Exercises and online test - Have student utilize the TFTP server software to manage the router's IOS image. Have student perform a backup of the router which includes transferring of files from and to the TFTP server. Files include the IOS image and the running-config file. Have student utilize the router's initial configuration utility to perform basic router setup commands. Be able to manage IOS images and device configuration files. Load Cisco IOS software from Flash, ROM or a TFTP server. Perform backup, upgrade and loading of Cisco IOS software and configuration files. Perform the initial router configuration (including using the setup mode)
Identify Routing Protocols	Lab Exercises and online test - Using required IOS

□	utilities, have the student enable the RIP routing protocol and issue the version 2 command. Using required IOS utilities, have the student enable the EIGRP routing protocol and issue the autonomous system number of 1. Using required IOS utilities, have the student issue a static route using the ip route statement. Instruct student to use ip route 0.0.0.0 0.0.0.0 fa0/0 command. Have student analyze the RIP, EIGRP, and IP Route commands to understand differences in routed vs. routing protocols. Configure a router for using the RIP routing protocol including V2. Configure a router for using the EIGRP routing protocol including Autonomous System Number. Configure static and default routes on a router. Differentiate between routed and routing protocols
Set up Basic Network Configuration	Lab Exercises and online test - Through the use of cables, routers, switches, and PCs have the student identify the correct IP addressing for each device then have them configure each device to allow for communications to occur. Instruct the student to now use the "show ip route" command to verify routing and routed protocol utilization and successful communication between all devices. Instruct the student to use the IOS command "show cdp neighbors" to identify the network topology. Be able to use the router, switch, and PC to configure IP addressing so that communication can occur. Verify IP routing. Use show commands to display network operational parameters so that anomalies are detected. Use CDP to identify a network topology. Use show commands to display basic network operational parameters
Create Access Control Lists (ACLs)	Lab Exercises and online test - Using the IOS and Access-Lists configuration options, have the student create an access-list that prevents the PC from accessing network resources including http, ftp, and telnet. Monitor and verify selected access list operations on the router. Configure access lists to meet specified operational requirements.
Set up Basic NAT Configuration	Lab Exercises and online test - Using the IOS utility NAT, have the student configure a router, switch, and 2 or more PCs so that they PCs use the router to access web addresses over the network/Internet. Use the NAT (Network Address Translation) to configure the router to share its Internet connection with other devices on the local network.
Identify Packet Tracer Activity Labs	Lab Exercises and online test - Utilizing the Cisco Academy provided Packet Tracer simulator, have

	each student identify the different networking components, design a basic network configuration using the identified components, then configure each device utilizing the CLI. Design and configure a basic networking structure that includes Routers, Switches, Wireless, PCs, and networking cabling. Upon completion of the training, the student will be able to calculate an appropriate IP addressing scheme for a designed network and configure all required components.
Begin Hands-On Skills Exam	Final Skills Exam - Each student must complete a hands-on skills exam consisting of all the technologies, services, and networking configurations utilized during the entire semester. The student will be given a scenario consisting of this material and given 1 hour to build and make operational to show that the student has learned all the skills effectively to move on to semester III. Actual Cisco Routers and Switches will be used for this exam.