

<b>Course Prefix/Number:</b>	<b>IST 202</b>
<b>Course Title:</b>	<b>Cisco Router Configuration</b>
<b>Lecture Hours/Week:</b>	<b>3.0</b>
<b>Lab Hours/Week:</b>	<b>0.0</b>
<b>Credit Hours/Semester:</b>	<b>3.0</b>

[Distance Learning Attendance/VA Statement](#)  
[Textbook Information](#)

## **COURSE DESCRIPTIONS**

This course is a study of current and emerging computer networking technology. Topics covered include safety, networking, network terminology and protocols, network standards, LANs, WANs, OSI models, cabling, cabling tools, Cisco routers, router programming, star topology, IP addressing, and network standards.

## **COURSE COMPETENCIES**

Upon successful completion of this course, the student should be competent to complete the following tasks:

### **Module 1 – Introduction to Routing and Packet Forwarding**

- Identify a router as a computer with an operating system (OS) and hardware designed for the routing process.
- Demonstrate the ability to configure devices and apply addresses.
- Describe the structure of a routing table.
- Describe how a router determines a path and switches packets.

### **Module 2 – Static Routing**

- Define the general role a router plays in networks.
- Describe the directly connected networks and the different router interfaces.
- Examine directly connected networks in the routing table and the use of CDP protocol.
- Describe static routes with exit interfaces.
- Describe summary and default route.
- Examine how packets get forwarded when using static routes.
- Identify how to manage and troubleshoot static routes.

### **Module 3 – Introduction to Dynamic Routing Protocols**

- Describe the role of dynamic routing protocols and place these protocols in the context of modern network design.
- Identify several ways to classify routing protocols.
- Describe how metrics are used by routing protocols, and identify the metric types used by dynamic routing protocols.
- Determine the administrative distance of a route and describe its importance in the routing process.
- Identify the different elements in the routing table.
- Given realistic constraints, devise and apply subletting schemes.

### **Module 4 – Distance Vector 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 processes for maintaining accurate routing tables that are used by distance vector routing protocols.
- Identify the conditions leading to a routing loop and explain the implications for router performance.
- Identify the types of distance vector routing protocols in use today.

#### **Module 5 – RIP Version 1**

- Describe the functions, characteristics, and operation of the RIPv1 protocol.
- Configure a device for using RIPv1.
- Verify proper RIPv1 operation.
- Describe how RIPv1 performs automatic summarization.
- Configure, verify, and troubleshoot default routes propagated in a routed network implementing RIPv1.
- Use recommended techniques to solve problems related to RIPv1.

#### **Module 6 – VLSM and CIDR**

- Compare and contrast classful and classless IP addressing.
- Review VLSM and explain the benefits of classless IP addressing.
- Describe the role of the Classless Inter-Domain Routing (CIDR) standard in making efficient use of scarce IPv4 addresses.

#### **Module 7 – RIPv2**

- Encounter and describe the limitations of RIPv1.
- Apply the basic Routing Information Protocol Version 2 (RIPv2) configuration commands and evaluate RIPv2 classless routing updates.
- Analyze router output to see RIPv2 support for VLSM and Classless Inter-Domain Routing (CIDR).
- Identify RIPv2 verification commands and common RIPv2 issues.
- Configure, verify, and troubleshoot RIPv2 in hands-on labs.

#### **Module 8 – The Routing Table: A Closer Look**

- Describe the various route types found in the routing table structure.
- Describe the route lookup process.
- Describe the routing behavior in routed networks.

#### **Module 9 – EIGRP**

- Describe the background and history of EIGRP.
- Describe the features and operation of EIGRP.
- Examine the basic EIGRP configuration commands and identify their purposes.
- Calculate the composite metric used by EIGRP.
- Describe the concepts and operation of DUAL.
- Describe the uses of additional configuration commands in EIGRP.

#### **Module 10 – Link-State Routing Protocols**

- Describe the basic features and concepts of link-state routing protocols.
- List the benefits and requirements of link-state protocols.

#### **Module 11 – OSPF**

- Describe the background and basic features of OSPF.
- Identify and apply the basic OSPF configuration commands.
- Describe, modify and calculate the metric used by OSPF.
- Describe the Designated Router/Backup Designated Router (DR/BDR) election process in multi-access networks.
- Employ the default-information originate command to configure and propagate a default route in OSPF.

### **MINIMAL STANDARDS**

Minimal standards of performance on all course competencies for receiving credit for the course and indicated by 60% overall accuracy on evaluation instruments that address the course competencies listed above. Required standards of performance on all course competencies for enrollment in

subsequent higher-level computer technology courses are indicated by 70% overall accuracy on evaluation instruments that address the course competencies listed above.

### COURSE REQUIREMENTS

Students are responsible for attending all schedule class meetings until they have completed all course requirements. Students are responsible for all material covered and for all assignments made in all classes. Any student caught cheating or involved in other academic dishonesty will be given a grade of zero and will be subject to further disciplinary action.

### ATTENDANCE POLICY

The attendance policy as stated in the York Technical College Handbook will be enforced. Makeup tests will not be given for theory tests. If a student must miss a theory test, he/she will get a zero for that test. However, students have the option of taking the comprehensive final. The student's grade on the comprehensive final will replace his/her lowest theory test grade. It is the student's responsibility to schedule a time for a make-up hands-on test with his/her instructor.

### EVALUATION STRATEGIES/GRADING

Students must pass the skills-based test that will be given at the end of the semester. They must also score 70% on the final exam in order to earn credit for the course. If these two criteria are met, the course grade will be comprised of the following:

Module 1 (8% total) Test – 4% of final average Lab(s) – 4% of final average	Module 2 (8% total) Test – 4% of final average Lab(s) – 4% of final average	Grading Scale	
		90-100	A
Module 3 (8% total) Test – 4% of final average Lab(s) – 4% of final average	Module 4 (8% total) Test – 4% of final average Lab(s) – 4% of final average	89-89	B
		70-79	C
Module 5 (8% total) Test – 4% of final average Lab(s) – 4% of final average	Module 6 (8% total) Test – 4% of final average Lab(s) – 4% of final average	60-69	D
		Below 60	F
Module 7 (8% total) Test – 4% of final average Lab(s) – 4% of final average	Module 8 (8% total) Test – 4% of final average Lab(s) – 4% of final average		
Module 9 (8% total) Test – 4% of final average Lab(s) – 4% of final average	Module 10 (8% total) Test – 4% of final average Lab(s) – 4% of final average		
Module 11 (8% total) Test – 4% of final average Lab(s) – 4% of final average	Final Exam (12% total)		

### ENTRY LEVEL SKILLS

The student must possess basic computer skills in a Windows operating system environment.

**PREREQUISITES**

IST201 with a minimum grade of "C"

**CO-REQUISITES**

None

**Disabilities Statement**

Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Office (SRO) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.