

Course Prefix/Number: IST 203
Course Title: Cisco Troubleshooting
Lecture Hours/Week: 3.0
Lab Hours/Week: 0.0
Credit Hours/Semester: 3.0

[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 WANs

- Describe how the Cisco enterprise architecture provides integrated services over an enterprise network.
- Describe key WAN technology concepts.
- Select the appropriate WAN technology to meet different enterprise business requirements.

Module 2 – PPP

- Describe the fundamental concepts of point-to-point serial communication.
- Describe key PPP concepts.
- Configure PPP encapsulation.
- Explain and configure PAP and CHAP authentication.

Module 3 – Frame Relay

- Describe the fundamental concepts of Frame Relay technology in terms of enterprise WAN services, including operation, implementation requirements, maps, and Local Management Interface (LMI) operation.
- Configure a basic Frame Relay permanent virtual circuit (PVC), including configuring and troubleshooting Frame Relay on a router serial interface and configuring a static Frame Relay map.
- Describe advanced concepts of Frame Relay technology in terms of enterprise WAN services, including subinterfaces, bandwidth, and flow control.
- Configure an advanced Frame Relay PVC, including solving reachability issues, configuring subinterfaces, and verifying and troubleshooting a Frame Relay configuration.

Module 4 – Network Security

- Identify security threats to enterprise networks
- Describe methods to mitigate security threats to enterprise networks
- Configure basic router security
- Disable unused router services and interfaces
- Use the Cisco SDM one-step lockdown feature
- Manage files and software images with the Cisco IOS Integrated File System (IFS)

Module 5 – ACLs

- Explain how ACLs are used to secure a medium-size enterprise branch office network, including the concept of packet filtering, the purpose of ACLs, how ACLs are used to control access, and the types of Cisco ACLs.
- Configure standard ACLs in a medium-size enterprise branch office network, including defining filtering criteria, configuring standard ACLs to filter traffic, and applying standard ACLs to router interfaces.
- Configure extended ACLs in a medium-size enterprise branch office network, including configuring extended ACLs and named ACLs, configuring filters, verifying and monitoring ACLs, and troubleshooting extended ACL issues.
- Describe complex ACLs in a medium-size enterprise branch office network, including configuring dynamic, reflexive, and timed ACLs, verifying and troubleshooting complex ACLs, and explaining relevant caveats.

Module 6 – Teleworker Services

- Describe the enterprise requirements for providing teleworker services, including the differences between private and public network infrastructures.
- Describe the teleworker requirements and recommended architecture for providing teleworking services.
- Explain how broadband services extend enterprise networks using DSL, cable, and wireless technology.
- Describe the importance of VPN technology, including its role and benefits for enterprises and teleworkers.
- Describe how VPN technology can be used to provide secure teleworker services to an enterprise network.

Module 7 – IP Addressing Services

- Configure DHCP in an Enterprise branch network. This includes being able to explain DHCP features and benefits, the differences between BOOTP and DHCP, DHCP operation: and configuring, verifying, and troubleshooting DHCP.
- Configure NAT on a Cisco router. This includes explaining key features and operation of NAT and NAT Overload, explaining advantages and disadvantages of NAT, configuring NAT and NAT Overload to conserve IP address space in a network, configuring port forwarding, and verifying and troubleshooting NAT configurations.
- Configure new generation RIP (RIPng) to use IPv6. This includes explaining how IPv6 solves any problem of IP address deletion, explaining how to assign IPv6 addresses, describing transition strategies for implementing IPv6 and configuring, verifying and troubleshooting RIPng for IPv6.

Module 8 – Network Troubleshooting

- Establish and document a network baseline.
- Describe the various troubleshooting methodologies and troubleshooting tools.
- Describe the common issues that occur during WAN implementation.
- Identify and troubleshoot common enterprise network implementation issues using a layered model approach.

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

ENTRY LEVEL SKILLS

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

PREREQUISITES

IST203 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.