Routing and Switching 2023-2024 Catal

[ARCHIVED CATALOG]

NETI 115 - Routing and Switching

PREREQUISITES: NETI 105 - Network Fundamentals.
PROGRAM: Network Infrastructure
CREDIT HOURS MIN: 3
LECTURE HOURS MIN: 1.5
LAB HOURS MIN: 3
DATE OF LAST REVISION: Fall, 2016

Covers 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. Students will be able to troubleshoot routers and switches and resolve common issues. Hands-on practical application will be included as preparation for the Cisco Certified Entry Networking Technician.

MAJOR COURSE LEARNING OBJECTIVES: Upon successful completion of this course the student will be expected to:

1. Understand and describe basic switching concepts and the operation of switches.
2. Understand and describe enhanced switching technologies.
3. Configure and troubleshoot basic operations of a small switched network.
4. Understand and configure the operations of a router, routing tables, and the route lookup process.
5. Understand and describe how VLANs create logically separate networks and how routing occurs between them.
6. Understand and describe dynamic routing protocols, distance vector routing protocols, and link-state routing protocols.
7. Configure and troubleshoot basic operations of routers in a small routed network.
8. Configure and troubleshoot VLANs and inter-VLAN routing.
9. Understand and describe the purpose and types of access control lists.
10. Configure, monitor, and troubleshoot ACLs for IPv4 and IPv6.
11. Understand and describe the operations and benefits of Dynamic Host Configuration Protocol and Domain Name System for IPv4 and IPv6.
12. Understand and describe the operations and benefits of Network Address Translation.
13. Configure and troubleshoot NAT operations.

COURSE CONTENT: Topical areas of study include -

- VLANs
- STP
- RSTP
- PVSTP
- 802.1q
- RIPv1
- RIPv2
- RIPng
- DHCP
- Single-area OSPF

- DNS
- Static/Default routing
- Cisco IOS
- NAT
- IPv4
- IPv6

CERTIFICATION/LICENSURE DISCLAIMER:

Ivy Tech cannot guarantee that any student will pass a certification or licensing exam. Your success will be determined by several factors beyond the instruction you are given in the classroom including your test-taking skills, your willingness to study outside of class, and your satisfactory completion of appropriate practice exams. Certification exam questions are drawn from databases of tens of thousands of possible questions and no two people are asked exactly the same progression of questions. Therefore, a thorough understanding of the subject matter is required. The goal of Ivy Tech in providing a certification exam studies class is to assist you in understanding the material sufficiently to provide a firm foundation for your studies as you prepare for the exam.

INSTRUCTIONAL METHOD

This is a live, face-to-face or synchronous-video course.

The synchronous-video course uses live webcast technology. The course lectures can be accessed by the student via any broadband connection so they may be able to participate from an off-campus location that has these capabilities. Students and instructors can communicate synchronously with each other throughout the scheduled time of the course.

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Each week's assignments are summarized on the calendar, accessed from the Calendar button in

IvyLearn. Learning activities can be found within the Modules area of the course. It takes a great deal of discipline, self-motivation, and effective time management skills to successfully complete an online course. Many students find it helpful to set aside specific times each week to work on course assignments.

Students with dial-up access will not be able to participate in these classes from home and will need to arrange for viewing site on campus or at a learning center.

SOFTWARE REQUIREMENTS:

- Proctored Final Exam and Skills Exam, using an on-campus network lab or "Net Lab (NDG)" are required.
- Cisco' NetSpace Learning Management System.
- Wireshark packet analyzer (latest version).
- Cisco' Packet Tracer network simulator (latest version).
- Terminal Emulation Software.
  - Tera Term (latest version)
  - PuTTY (latest version)
- TFTP 32 (latest version)

Course Addendum - Syllabus (Click to expand)