Network Fundamentals 2023-2024 Catal

[ARCHIVED CATALOG]

NETI 105 - Network Fundamentals

PREREQUISITES: Demonstrated readiness for college-level English, and Demonstrated readiness in TECH Math, QUANT Math, or STEM Math Path Ready.
PROGRAM: Network Infrastructure
CREDIT HOURS MIN: 3
LECTURE HOURS MIN: 1.5
LAB HOURS MIN: 3
DATE OF LAST REVISION: Fall, 2016

Covers the fundamentals of networking. Students will learn both the practical and conceptual skills that build the foundation for understanding basic networking. Human versus network communication are compared, and the parallels between them are presented. Students are introduced to the two major models used to plan and implement networks. The functions and services of the Open System Interconnection and Transport Control Protocol/Internet Protocol Models are examined in detail. Various network devices, network addressing schemes, and the types of media used to carry data across the network are also presented. Designed to be a study of local area networks, topologies, and functions while providing a general understanding of basic local area network protocols.

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

1. Identify telecommunications standards organizations.
2. Describe the OSI and TCP/IP Models.
3. Describe the functions of various TCP/IP protocols and utilities.
4. Describe basic data transmission concepts, including full duplexing, attenuation, latency, and noise.
5. Identify various network hardware devices and their respective functions.
6. Identify media and methods of data transmission, including Ethernet standards for both copper and fiber implementations.
7. Differentiate among the characteristics and functions of local and wide area networking technologies, transmission methods, and topologies.
8. Explain the role of network management in network operations.
9. Demonstrate the ability to plan, configure, and troubleshoot a network.
10. Build/configure a simple wired and wireless LAN and VLAN.
11. Demonstrate the ability to appropriately implement IPv4 and IPv6 addressing schemes, including CIDR/VLSM.
12. Demonstrate the ability to monitor various network characteristics.
13. Exhibit how to implement security and network optimization in data communications.

COURSE CONTENT: Topical areas of study include -

- Cisco IOS
- Protocols
- Integrity and Availability
- Routing

- IP Addressing
- Security
- Local Area Network (LAN)
- TCP/IP Model
- Maintaining and Upgrading
- Standards and the OSI Model
- Network Cabling
- Transmission Basics and Networking Media
- Network Hardware
- Troubles Shooting
- Network Operating Systems
- WANs and Remote Connectivity
- Physical and Logical Topologies
- Wide Area Network (WAN)
- 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.
- These video courses 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.
- 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.

COURSE INSTRUCTIONAL LAB REQUIREMENTS:

The College has determined this course has specific laboratory requirements. The requirements are listed below for hardware and software, along with specifics determined for various delivery methods.

HARDWARE REQUIREMENTS:

- Course must be taught in a School of Computing Information Technology Lab.
- Minimum of one Cisco Network Academy Equipment Bundle A.

SOFTWARE REQUIREMENTS:

- Proctored Final Exam and Skills Exam, using an on-campus network lab or "Net Lab (NDG)" are required.
- Cisco's NetSpace Learning Management System.
- Wireshark packet analyzer (latest version).
- Cisco's 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)
