Understanding Voice and Data Networks

OVERVIEW

Understanding Voice and Data Networks is intended as an introduction to the communications technologies used in transporting voice and data. It provides a broad base of knowledge into communication networks but doesn't require prior technical background or experience in the field. The goal of the course is to provide a comprehensive understanding of communications technologies and their implications on business. Understanding Voice and Data Networks combines computer, electrical engineering and business aspects of communication by providing a thorough, up-to-date presentation of the latest technologies being deployed. The material also is appropriate as a reference tool for those who need to understand more about broadband voice and data communication concepts and technologies.

Delivery Options:

Learning takes place using a textbook. Lessons and final exams are taken online.

Completion Time:

Varies based on the student's self-study pace, however, the maximum time allowed is six months from enrollment.

BENEFITS

Upon completion students will:

- understand voice and data concepts and applications and how they integrate with broadband business
- understand the technologies specific to voice and data transportation
- have a reference tool on voice and data business functions and technologies
- earn three hours of college credit
- gain 12 BICSI continuing education credits for RCDD, RCDD/LAN, RCDD/OSP, Residential Installer and Installer Level 2/Technician
- use this course to help prepare for SCTE's Broadband Premises Specialist, Broadband Telecom Center Specialist Data and Voice endorsements and Broadband Communications Technical Engineer Category VI certifications
- receive an industry-recognized Jones/NCTI™ certificate of graduation

Ideal for:

Personnel with little or no prior technical or field experience seeking a broad base of communications network knowledge, or:

- network technicians
- headend technicians
- access bandwidth technicians
- system technicians

COURSE OBJECTIVES

Upon completing this course, students will be able to:

1. outline the history of telecommunications technologies
2. describe the responsibilities of IXCs and LECs

(Continued)

RELATED COURSES

Students completing this course should then enroll in:

- Broadband HFC Network Testing and Measurements
- Introduction to Networking: Local Area Networks

TRAINING FEATURES

- Knowledge-based, broadband and job-specific content
- Highly illustrated and easy to read course materials
- Curriculum advising
- 24/7 lesson feedback and progress monitoring at www.jonesncti.com
- Online testing

Visit **www.jonesncti.com/coursepolicy.htm** for important information on computer hardware/software requirements and student-to-student transfer and extension limitations

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COURSE OBJECTIVES *(Continued)*

3. identify the role of national and international organizations in establishing and implementing telecommunications standards
4. explain the relationship between bandwidth and information transfer
5. explain and compare modulation and multiplexing
6. categorize the different types of copper cables, list their characteristics and describe the applications of each
7. identify and explain the various fiber-optic system components and describe their application in the network.
8. describe the function of the major components of Signaling System 7 and outline the process for making a call through the network
9. identify the components of a modern switching system and explain how GoS and estimated traffic are used in system design
10. list the cellular network components and explain the cellular network access process
11. explain the purpose of the OSI reference model protocol layers
12. describe how a network device accesses a network using LAN access methods
13. list and discuss the purposes of the devices that perform Internetworking functions
14. discuss the transmission of a message by various packet-switching technologies
15. explain the process of VOIP Internetworking

COURSE OUTLINE

1. Overview of Telecommunications
Exploring the history of telecommunications and classifying telecommunications and data networks

2. Telecommunication Standards and Electronics
Identifying telecommunications standards, understanding electronic communications and outlining communication system parameters

3. Electronic Communications
Examining modulation and understanding multiplexing

4. The Copper Transmission Media
Listing copper cables, understanding attenuation in copper cables and cabling architectures

5. The Fiber-Optic Transmission Media
Introducing fiber-optic fundamentals, exploring fiber-optic topologies, examining fiber-optic implementation and introducing future issues in fiber

6. Voice Communications
Describing the public switched telephone network, identifying network design parameters, understanding the telephone, line signaling and examining trunk signaling

7. Intelligent Networks
Examining interoffice trunk signaling, listing intelligent network services and exploring business telephone systems

8. Wireless Communications
Exploring the cellular mobile telephone system, comparing analog and digital access, identifying wireless applications and products and examining satellite communications

9. Data Communications
Explaining the evolution of data networks, understanding the open systems inter-connection model, examining character codes, identifying data coding methods, reviewing data compression and understanding error detection and correction

10. Network Communications
Reviewing data link protocols, explaining the OSI model implemented in LANs, listing LAN access methods, comprehending LAN technologies and examining Internetworking

11. Wide Area Network and Broadband Access Technologies
Understanding packet-switching networks, examining integrated services digital network, reviewing synchronous optical networks, introducing asynchronous transfer mode, defining packet over SONET and looking at residential or small business access technologies

12. Internet and Converged Networks
Exploring the TCP/IP (Transmission Control Protocol/Internet Protocol) model, explaining IP addressing, examining virtual private networks, understanding converged networks and describing Voice over IP

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