

COURSE OUTLINE

ELEC-103

Introduction to Wireless and Network Communications

3 Semester Hours

HOWARD COMMUNITY COLLEGE

Description

This course is designed to introduce the student to the principles and applications of wireless technology-- cordless, cellular, telephony, Personal Communications Systems (PCS), mobile data networks, and Wireless Local Areas Networks (WLAN). The principles of Local Area Networks (LAN) and Wide Area Networks (WAN) will be covered. Technical material is thoroughly integrated with specific applications and focuses on wireless standards, descriptions of systems and products, and wireless transmission techniques. (3 hours weekly)

Overall Course Objectives

Upon completion of this course, the student will be able to:

1. Differentiate between the analog and digital communications.
2. Explain the concept of communications with serial binary data and define the terms ASCII, synchronous, asynchronous, and baud rate.
3. State the relationship between communications channel bandwidth and data rate in bits per second.
4. Define the term modem and explain its operation and applications.
5. Discuss wireless information network principles, implementation and applications.
6. Describe digital technology in wireless networks and data communication in business, industrial and government sectors.
7. Recognize the purpose and functions of digital cellular, Cellular Digital Packet Data (CDPD), Personal Communication Services (PCS), Mobile computing and Wireless Local Area Networking (WLAN).
8. Describe packet-switched data networks.
9. Describe how voice and data transmission is integrated in wireless communications.
10. Identify wireless standards and descriptions of systems and products, wireless transmission techniques, and wireless multiple access techniques.
11. Identify current advancements in the telecommunications industry involving cellular, cordless telephone, paging, mobile, data and wireless LAN industries (WLAN).
12. State the importance of microwaves to the future of communications.
13. Discuss the application of satellite systems and how it is accomplished.

Major Topics

- I. History of Telecommunications and its Applications
- II. Internal and External Influences on Telecommunications in the Enterprise
- III. Voice Communications
 - A. Basic Telephone System
 - B. Central Office Unit
 - C. Frequency Division Multiplexing (FDM)
 - D. Telephone Services
- IV. Data Transmission and MODEMs
 - A. Modes of Transmission
 - B. Modems
 - C. Modem Classifications
 - D. Modem Interfaces
- V. Overview of Wireless Information Networks
 - A. Evolution of Wireless Networks
 - B. Basics of Cellular and Cordless Telephone
 - C. Basics of Paging, Mobile, and Wireless LAN Industries (WLAN)
- VI. ABCs of Personal Communications Services (PCS)
 - A. Overview of Time Division Multiple Access (TDMA)
 - B. Basics of Code Division Multiple Access (CDMA)
 - C. Basics of Global System for Mobile Communications (GSM)
- VII. Wireless Communications
 - A. Wireless Standards and Description of Systems and Products
 - B. Wireless Transmission Techniques
 - C. Wireless Multiple Access Techniques
 - D. Integration of Voice and Data Using Wireless Communications
- VIII. Microwave Techniques and Applications
- IX. Satellite Communications and Implementations

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member but will be calculated on the basis of exams and quizzes.

Writing: Specific writing assignments will be determined by the individual faculty member.

Other Course Information

This course is a course in the Telecommunications program.