

Bergen Community College
School of Business, Social Science and Public Service
Course Syllabus
INF-274 Wireless Networking

INF-274 Wireless Networking introduces networking students to the wireless networking technology. Student learns wireless theory and how to apply it to modern networks. Course includes radio frequency fundamentals, wireless antennas and access, configuring, managing and securing a wireless network

3 Hours Lect, 3 credits

Prerequisite: INF-160

Student Learning Objectives

As a result of meeting the requirements of this course student will be able to:

- Create a Wireless LAN
- Apply basic radio theory
- Secure a wireless network
- Troubleshoot and repair a wireless network
- Perform a site survey

Course Content

This is an entry level course in basic wireless networking theory. The student will learn basic radio theory and the details of the latest wireless protocols. The goal is to be able to manage a wireless LAN infrastructure and maintain a wireless network that is cost effective reliable and secure.

Course Text

CWNA Guide to Wireless LANs 3rd Edition

By Mark Ciampa

Pub: Course Technology

ISBN: 978-133-13217-2

Grading Policy

Exam 1	20%
Exam 2	20%
Exam 3	20%
Exam 4	20%
Project	20%

Attendance/Lateness policy

All students are expected to attend punctually every scheduled meeting of each course in which they are registered. Attendance and lateness policy sanctions are to be determined by the instructor for each section of the course. These will be established in writing on the individual course outline. Attendance will be kept by the instructor

Course Schedule

Week 1	Chap 1 World of Wireless Wireless Applications Types of Wireless Networks Wireless Organizations
Week 2	Chap 2 Wireless Local Area Networks Understanding Standards Wireless LANs – 802.11n WLAN Hardware and Software
Week 3	Chap 3 Radio Frequency Fundamentals RF basics Wavelength Frequency Amplitude Phase RF Range and Speed Line of sight Interference RF behavior Measure RF Absolute power Relative power
Week 4	Chap 4 WLAN Antennas Basic RF Antenna Concepts RF lobes, beam width, antenna gain WLAN Antenna types Omnidirectional, highly directional Antenna Coverage Multiple Input Multiple Output Antenna Installation
Week 5	Chap 5 Physical Layer Standards

Narrow Band
Spread Spectrum
802.11a
802.11b
802.11g
802.11n

- Week 6 Chap 6 Media Access Control Layer
 WLAN Service Sets
 802.11 Mac Layer Frame Formats
 MAC Operations
- Week 7 Chap 7 WLAN Management
 Autonomous Access Point Architecture
 Controller Based Architectures
 Multiple Channel Architecture vs
 Single Channel Architecture
 Wireless Network Management Systems
- Week 8 Chap 8 Conducting a Site Survey
 What is a Site survey
 Size, Number of users
 Site Survey Tools
 Procedures for Conducting a Site Survey
- Week 9 Chap 9 Wireless LAN Security
 Wireless Attacks
 Legacy 802.11 Security
 Vulnerabilities of 802.11
- Week 10 Chap 10 Implementing Wireless LAN Security
 WLAN Security
 SSID, MAC Filtering
 Authentication and encryption
 802.1x, WEP, TKIP, CCMP
 VPN
 PPTP, L2TP
- Week 11 Chap 11 Managing a Wireless LAN
 Procedural Security Defenses
 Monitoring the Wireless Network
 Maintaining the Wireless Network
- Week 12 Chap 12 Wireless Troubleshooting
 Identifying Wireless Problems
 Transmitting, receiving, no connectivity, thruput

Optimizing Wireless Networks
Infrastructure
Load balancing
Multipath
Hidden Node

Week 13 Chap 13 Other Wireless Networks
 Wireless Personal Area Networks – 802.15
 Bluetooth
 UltraWideband
 Wireless Metropolitan Area Networks
 Wireless Wide Area Networks

Week 14 Review

Week 15 Exam