

Concepts of Wireless Networking (CSC-308)
Tribhuvan University
Institute of Science and Technology
Soch College of Information Technology

Course Title: Concepts of Wireless Networking

Course no: CSC-308 ----- **Full Marks:** 60+20+20

Credit hours: 3 ----- **Pass Marks:** 24+8+8

Nature of course: Theory (3 Hrs.)

Course Synopsis: This course contains the concept of wireless networking technology.

Goal: To provide the concept and working principle for wireless communication and networking.

Course Contents:

Unit 1. Introduction ----- 4 Hrs.

History of wireless communication, Challenges in wireless communication networking, Wireless communication standards.

Unit 2. Wireless Channel Characterization-----6 Hrs.

Multipath propagation environment, Linear time-invariant channel model, Channel correlation function, Large-scale path loss and shadowing, Small-scale multipath fading.

Unit 3. Bandpass Transmission Techniques -----7 Hrs.

Introduction, Signal space and decision regions, Digital modulation, Power spectral density, Probability of transmission error.

Unit 4. Receiver Techniques for fading Dispersive Channels -----5 Hrs.

Overview of channel impairment mitigation techniques, Diversity, Channel equalization.

Unit 5. Fundamental of Cellular Communications ----- 8 Hrs.

Introduction, Frequency reuse and mobility management, Cell cluster concept, Cochannel and adjacent channel interference, Call blocking and delay at the cell-site, Other mechanism for capacity increase, channel assignment strategies.

Unit 6. Multiple Access Technologies ----- 5 Hrs.

Multiple access in a radio cell, Random access, Conflict-free multiple access technologies, Spectral efficiencies.

Unit 7. Mobility Management in Wireless Networks ----- 5 Hrs.

Introduction, Call admission control (CAC), Handoff management, Location management for cellular networks, Location management for PCS networks, Traffic calculation.

Unit 8. Wireless/Wireline Internetworking ----- 5 Hrs.

Introduction, Mobile IP, Internet protocol (IP), Transmission control protocol (TCP), Network performance, Wireless application protocol (WAP), Mobile AD HOC networks.

Text books / Reference books:

Wireless Communications and Networking, Jon W. Mark and Weihua Zhuang, Prentice-Hall of India Private Limited, 2005.

Principles of Wireless Networks, Pahlavan, Prentice-Hall of India Private Limited, 2005.