4/4 B.Tech - SEVENTH SEMESTER

EC7T5A **Wireless Communications and Networks** **Credits: 3**

Lecture: 3 periods/week **Internal assessment: 30 marks**
Tutorial/Interaction Session: 1period/week **Semester end examination: 70 marks**

Prerequisites: Computer networks (EC6T5)

Course Objectives:

- Gain knowledge with regard to Wireless communication engineering including, digital communications and access technologies.
- Identify and understand Wireless communication networks and their evolution. Follow broadband networks trends
- Focus on Private wireless networks and their characteristics and current practices.

Learning Outcomes:

Student will be able to

- Analyze the characteristics of different multiple access techniques in mobile/wireless communication.
- Design Wireless communication systems as per standards
- Develop new trends in Mobile/wireless communication.

UNIT-I

Multiple Access Techniques for Wireless Communication: Introduction, FDMA, TDMA, Spread Spectrum, Multiple access, SDMA, Packet radio, Packet radio protocols, CSMA protocols, Reservation protocols

UNIT-II

Introduction to Wireless Networking: Introduction, Difference between wireless and fixed telephone networks, Development of wireless networks, Traffic routing in wireless networks.

UNIT-III

Wireless Data Services: Common channel signalling, ISDN, BISDN, SS7, SS7 user part, signalling traffic in SS7.
Mobile IP and Wireless Access Protocol: Mobile IP Operation of mobile IP, Co-located address, Registration, Tunnelling, WAP Architecture, overview, WML scripts, WAP service, WAP session protocol, Wireless datagram protocol.

UNIT-IV

Wireless LAN Technology: Infrared LANs, Spread spectrum LANs, Narrow band microwave LANs, IEEE 802 protocol Architecture and services, 802.11 medium access control, 802.11 physical layer.
Bluetooth: Overview, Radio specification, Base band specification, Links manager specification, Logical link control and adaptation protocol. Introduction to WLL Technology.

UNIT-V

Mobile Data Networks: Introduction, Data oriented CDPD Network, GPRS and higher data rates, Short messaging service in GSM, Mobile application protocol.
Wireless ATM & HiPER LAN: Introduction, Wireless ATM, HIPERLAN, Adhoc Networking and WPAN.

Learning Resources

Text Books:

1. Wireless Communication and Networking – William Stallings, PHI, 2003.
2. Wireless Communications, Principles, Practice – Theodore, S. Rappaport, PHI, 2nd Edn., 2002.

References:

1. Telecommunication switching systems and networks – Thiagarajan Viswanathan, PHI
2. Wireless Digital Communications – Kamilo Feher, PHI, 1999.
3. Principles of Wireless Networks – Kaveh Pah Laven and P. Krishna Murthy, Pearson Education, 2002.