WIRELESS COMMUNICATION

Paper Code	**ECS-702**
Course Credits	4
Lectures/ Week	3
Tutorials/ Week	1

Course description

UNIT- I WIRELESS PERSONAL AREA NETWORK (W PAN)

Introduction to Wireless Communication, radio frequency spectrum and unregulated bands, advantages and disadvantages of wireless communications; What is a WPAN, current standards – IEEE project 802; Infrared WPANs (IrDA) – overview, IrDA Overview, salient features and considerations; Bluetooth – introduction, Blue tooth SIG and IEEE 802.15.1 standards, Bluetooth protocol stack, Bluetooth radio module, Bluetooth power classes, Technology piconets and scatternets, Link management Protocol (LMP) Layer, Bluetooth security, Bluetooth issues.

UNIT- II WIRELESS LOCAL AREA NETWORKS (WLAN)

Introduction ; WLAN components – wireless NIC, Access points; WLAN Modes – Ad Hoc Mode, Infrastructure Mode; IEEE -802. standards; IEEE 802.11 Infrared WLAN; IEEE – 802.11b standards, Wi-Fi, Physical Layer, Medium Access Control Layer – put coordination function, association and re-association, power management, MAC frame-formats.

UNIT- III WIRELESS WIDE AREA NETWORKS (PART-I)

Introduction to mobile telephony, the conventional mobile telephone service – basis limitations; The concept of cellular telephony – how cellular telephony works; AMPS, digital cellular telephony; capacity augmentation techniques – frequency re-use, cell sectoring, cell splitting.

UNIT-IV WIRELESS WIDE AREA NETWORKS (PART-II)

Global System for Mobile – general GSM system structure, HLR, VIR, BSC, BTS, MSC; various generations of mobile networks (1a , 2G , 2.5G , 3G); Digital cellular wireless migration path; Satellite Communication – introduction and basics , satellite system configuration , payload and platform , satellite frequency bands , modulation techniques – ASK , PSK , FSK , QAM ; frequency reuse : various types of satellites – LEO , MEO (HED), GEO (geosynchronous and geostationary)

UNIT-V FIXED WIRELESS

Introduction – What is fixed wireless? last mile wireless connection, baseband and broadband transmission, backhaul connections; Baseband systems – Remote Wireless Bridge; Broadband transmission – Free Space optics (FCD) salient features, advantages and disadvantages ; Local Multipoint distribution Service (LMDS), main features, LMDS infrastructures, advantage and disadvantages; Multichannel Multipoint Distribution Service (MMDS), main features, advantages, disadvantages.

Pre-requisite

Course/Paper: Communication Systems

Text Book/

- Mark Ciampa, “Guide to Wireless Communications”,

Reference books: Vikas Publishing House, Reprint 2003

- Theodore S. Rappaport, “Wireless Communications: Principles and Practices”, Pearson Education, 2nd edition.

Course

outcomes:

CO1: Ability to understand the fundamentals of wireless communication, Bluetooth and IrDA standards, their working and their comparison.

CO2: Ability to understand the IEEE 802.11 standards, their protocol description, power management and other issues, and the comparison of these standards.-Compare various wireless technologies

CO3: Ability to understand design of Wireless Wide Area Networks which includes the concept of cellular telephony, improving system capacity, handling interference, Radio Resource Management and handoff.

CO4: Ability to trace the evolution of various generations of mobile networks, including the evolution in technology (modulation type, etc) and transmission elements such as satellites.

CO5: Ability to understand the concept of fixed wireless in the backdrop of mobile networks, baseband and broadband technologies (FCD, LMDS, MMDS) and their comparison.