

Wireless Communication

(Elective – I)

B.E. Sem. VII [ETRX]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical Exam	–	–
Oral Exam	–	25
Term Work	–	25

Objective : The objective of the course is to introduce the Concepts of basic wireless mobile communication systems.

Pre-requisite : Fundamentals of Digital Communication

SYLLABUS

1. Introduction and Cellular Concept

Existing technology, Evolution in wireless systems, Trends in cellular system. Frequency Reuse channel Assignment Strategies, Handoff Strategies, Interference and System Capacity, Cellular System, Design in worst case with an omni Directional Antenna, Co-Channel Interference Reduction with use of Directional Antenna, Improving Coverage and Capacity in Cellular systems, Trunking and Grade of service.

2. Wireless Communication Systems GSM

GS Services and features , GSM Architecture and interfaces, GSM Radio Sub System , GSM Channel Types , Traffic Channels, Control Channels, Example of a GSM call, Frame structure for GSM , Signal Processing in GSM, GPRS.

3. Wideband Modulation Techniques –OFDM

Basic Principles ,OFDM Signal Mathematical representation , Block Diagram , Selection Parameters for modulation , Pulse shaping, Windowing, Spectral Efficiency , Synchronization.

4. Wireless Communication Systems CDMA IS95

Direct sequence Spread Spectrum , Spreading codes, Multipath Signal Propagation and RAKE receiver, Frame Quality and BER Requirements, Critical challenges of CDMA, TIA IS95 System, Physical and Logical Channels of IS95, CDMA IS95 call processing, soft hand off and power control in CDMA, Access and Paging Channel Capacity, Reverse and Forward Link Capacity of a CDMA System.

5. Wireless Communication Systems CDMA 2000

CDMA layering structure, CDMA 2000 channels, logical channels , forward link physical ,forward link features ,reverse physical channels , CDMA 2000 Media Access control and LAC sub layer, Data services , Data services in CDMA 2000 , mapping of logical channels to physicals, evolution of CDMA IS95 to CDMA 2000.

6. More Wireless Communication Systems

Bluetooth , Wi Fi Standards, WIMAX, Wireless Sensor Networks, Zigbee , UWB, IEEE 802.20 and Beyond.

References :

1. Wireless Communication : Principles and Practice (*Theodore S. Rappaport*) Pearson Education
2. Wireless Communication (*Upena Dalal*) Oxford Higher Education
3. Wireless Network Evolution : 2G to 3G (*Vijay . K. Garg*) Pearson Education
4. Principles and Application of GSM (*Vijay Garg , Joseph . E. Wilkes*) Pearson Education
5. Mobile Cellular Telecommunications : Analog and Digital Systems (*William C.Y. Lee*) Tata McGraw – Hill Edition
6. Introduction to Wireless Telecommunication Systems and Networks (*Gary J. Mullet*) DELMAR CENGAGE Learning
7. Wireless Communications and Networks : 3G and Beyond (*ITI Saha Misra*) Tata McGraw – Hill Edition
8. Fundamentals of Wireless Communication (*David TSE, Pramod Viswanath*) Cambridge University Press.
9. Mobile Wireless communications (*Mischa Schwartz*) Cambridge University Press
10. Wireless Communications (*Andreas F. Molisch*) Wiley Student Edition.

