

Session:- July-Dec 2024

Semester: VII

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Course Code: EC-45009

Course Name: Wireless and Mobile Networks

Year: 2024-25

Lecture No.	Topic Covered	Remark
1	Review of 1G to 4G technologies with their standards and applications. Basic standard and data rates offered in 5G.	
2	Basic Terminologies used in 3G and their standards defined by 3GPP.	
3	UMTS standard and basics of User Equipment (UE) along with its sub elements	
4	Node B's and architecture of UTRAN , Core networks in 3G Radio Network Systems (RNS), Radio Network Controller (RNC), Functions of NodeB.	
5	Functions of Radio Network Systems (RNS), User Plane, Control Plane, Core Network Architecture.	
6	SGSN, GGSN, CS Domain, PS Domain protocol architecture.	
7	DSSS, WCDMA technique, Scrambling technique.	
8	4G- LTE and LTE-Advance.	
9	5G NR, mm-Wave Communication, Performance analysis of wireless channel, Basics of Diversity.	
10	Need for MIMO systems, Introduction to MIMO systems, Need for Beamforming.	
11	Channel Capacity of SIMO and MISO systems compared to SISO systems	
12	Physical layer-NOMA, SIC.	
13	Massive MIMO concept, Need for Channel Estimation	

14	Log-Likelihood based Channel Estimation of wireless channel	
15	Imperfect Channel State Information, Pilot Contamination	
16	Spatial Modulation using MIMO antennas	
17	MIMO based channel propagation models	
18	Overview of wireless sensor Network Characteristics, Network applications, sensor node and nw architecture	
19	Classification of WSN,objective,fundamentals of MAC design.	
20	Contention based and contention free MAC protocol.	
21	Fundamentals and taxonomy of routing protocols.	
22	Design issues and routing challenges in WSN.	
23	Network layering and In-NetworkProcessing,data Centricity,PathRedundancy etc..	
24	Location based Energy aware routing protocols	
25	Hierarchical routing protocols, LEACH protocol	
26	IEEE 802.11 standards and its variants	
27	Concept and study of Short Range Wireless Networks	
28	Bluetooth Network and its components	
29	RFID and Zigbee Technologies	
30	LoRa and 6LoWPAN	