

# GUJARAT TECHNOLOGICAL UNIVERSITY

## M. E. Wireless Communication Technology (EC)

Semester: I

Subject Name: **Wireless Communication Theory**

Subject Code: **714401**

Sr. No	Course Content
1	<b>Fundamental Concepts :</b> Introduction, Brief History of Wireless Telecommunication, Elements of a Wireless Communication System, Wireless Networks, Signals and Noise, The Frequency Domain, The Radio-Frequency Spectrum
2	<b>Overview of Modulation Schemes :</b> Analog Modulation, Amplitude Modulation, Frequency and Phase Modulation, Bessel Functions, Pre-emphasis and De-emphasis Digital Modulation, Pulse-Code Modulation, Differential PCM, Delta Modulation, Adaptive Delta Modulation, FSK, PSK, QAM, M-ary PSK,MSK, GMSK,OFDM
3	<b>Multiple Access Techniques :</b> Random Access, Conflict free multiple access, FDMA, TDMA, CDMA
4	<b>Cellular Radio :</b> Introduction, Improved Mobile Telephone Service (IMTS), Introduction to the Advanced Mobile Phone System (AMPS), Cellular Carriers and Frequencies, Channel Allocation, Frequency Reuse, AMPS Control System, Security and Privacy, Cellular Telephone Specifications and Operation, Cell-Site Equipment, Fax and Data Communication Using Cellular Phones, Digital Cellular Systems
5	<b>Personal Communication Systems :</b> Introduction, Differences Between Cellular Systems and PCS, IS-136 (TDMA) PCS, TDMA Digital Control Channel, GSM, IS-95 CDMA PCS, Comparison of Modulation Schemes, Data Communication with PCS, Cellular and PCS antennas
6	<b>Satellite-Based Wireless Systems :</b> Introduction, Satellite Orbits, Use of Satellites for Communication, Satellites and Transponders, Signal and Noise Calculations, Systems Using Geostationary Satellites, Systems Using Medium-Earth-Orbit Satellites

7	<b>Paging and Wireless Data Networking :</b> Introduction, Paging and Messaging Systems, Wireless Local-Area Networks, Ethernet Bridges, Wireless LANs, Wireless Packet-Data Services
8	<b>The Future of Wireless :</b> Introduction, Wireless Local Loop, Third Generation(3G), 4G services and applications, Wireless ATM and Ad-hoc Routing, Personal Area Networks, Residential Microwave Communication Systems, Convergence, Divergence, Safety and Esthetic Concerns

### **Text Books:**

1. Wireless communications & Networking, by John W. Mark and Weihua Zhuang. PHI Pub.
2. Wireless Communication Technology By Roy Blake. Delmar Thomson Pub.

### **Reference Books:**

1. Wireless Communication by T. S. Rappaport. PHI Pub.
2. Principles of Wireless Networks: A unified approach by K. Pahlvan and P. Krishnamurthy. Pearson Pub.