

# GUJARAT TECHNOLOGICAL UNIVERSITY

## M.E Semester: 1 Computer Engineering

Subject Name    Wireless Computer Networks

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Sr.No	Course content
1.	Overview of Wireless Networks and Medium Characteristics : Introduction, Different generations. Introduction to 1G, 2G, 3G and 4G networks Radio propagation mechanism, Path loss modeling, Effects of Multipath and Doppler.
2.	Physical Layer and Medium Access Alternatives: Short distance base band transmission, Ultra Wide-Band pulse transmission, Carrier modulated transmission, Digital cellular transmission, Broadband and Spread Spectrum transmission, Diversity and Smart receiving techniques. Fixed assignment access for voice oriented networks, Random access for data oriented networks.
3.	Wireless Network Planning and Operation: Wireless network topologies, Cell fundamentals and topologies, Signal to Interference ratio calculation, Capacity expansion techniques. Network planning for CDMA systems. Mobility management, Mobile internet protocols, Radio resources and power management, Security in wireless networks.
4.	GSM, TDMA, CDMA technology and Mobile Data networks: Mechanism to support mobile environment, Communication infrastructure. Reference architecture for North American Systems, IS-95, IMT -2000. GPRS and higher data rates, Short messaging services in GSM, Mobile application protocols.
5.	Wireless Broad band and Ad-hoc networks: IEEE 802.11 WLANs, Ad-Hoc networking, Bluetooth, WPANs, WiMax technology. Wireless Geolocation Systems.

### Reference Books:

1. Wireless Communications and Networks, 3G and beyond, ITI Saha Misra, TMH.
2. Mobile Computing Technology, Application and Service Creation By Asoke K Talukder and Roopa R Yavagal, Tata McGraw Hill
3. Mobile and Personal Communication Systems and Services By Raj Pandya ISBN: 81-203-1710-6, PHI
4. Principle of wireless Networks by Kaveh Pahlavan and Prashant Krishnamurthy, Pearson 2002.
5. Wireless Communication Principles and Practice by Theodore S. Rappaport, PE India.
6. Wireless and Mobile Network Architectures: Yi-Bing Lin and Imrich Chlamtac, WILEY
7. Mobile Computing by Raj Kamal ,Oxford