

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Computer Engineering

(Wireless Mobile Computing)

Semester: II

Subject Name: **Mobile Communication Technologies**
(Elective III & IV- Group 2)

Subject Code: **725305**

Course Content:

The Cellular Engineering Fundamentals:

Cell Concept Frequency Reuse, Channel Assignment Strategies: Fixed Channel Assignment (FCA), Dynamic Channel Assignment (DCA), Handoff Process: Factors Influencing Handoffs, Handoffs in Different Generations, Handoff Priority, A Few Practical Problems in Handoffs Enhancing Capacity and Cell Coverage: The key Trade-offs, Cell-Splitting, Sectoring, Microcell Zone Concept

Modern Wireless Communication Systems

1G: First Generation Networks, 2G: Second Generation Networks: TDMA/FDD Standards, CDMA/FDD Standard, 2.5G Mobile Networks, 3G: Third Generation Networks, 3G Standards and Access Technologies, 3G W-CDMA (UMTS)

Case Study based on above concepts: (GSM)

GSM System Architecture, Radio Interface, Protocols, Localization and calling, Handover, Data Services: GPRS

Mobile IP:

Node mobility and IP, Mobile IP, Foreign agent discovery, Home agent registration, Packet delivery through tunnelling and encapsulation, Route optimization

Mobile Transport Layer:

Traditional TCP and its unsuitability: Flow control, Congestion avoidance, slow start, and retransmission, TCP Reno and TCP Vegas Classical TCP Improvements in wireless networks: Indirect TCP, Snoop TCP, Mobile TCP, Transaction oriented TCP, TCP over 2.5G/3G

Designing Applications over Mobile Environment: Issues and Challenges

Traditional Abstractions and their problems: Message Passing, Remote Invocations, Notifications, Shared spaces, Message Queuing.

The Implicit Invocation Paradigm (Publish/Subscribe)

The P2P Paradigm and its usage in Mobile environment

Case Study based on above concepts: Data dissemination in VANET (Vehicular Ad-hoc Network)

Text Book:

1. J. Schiller, Mobile Communications, Addison –Wesley, 2003

Reference Book:

1. Mobile and Wireless Design Essentials by Martyn Mallick, John Wiley & Sons