MOBILE COMMUNICATIONS
(Common to CSE & IT)

Course Code :13CT1128

L	T	P	C
4	0	0	3

Pre requisites: Computer Networks.

Course Outcomes:

At the end of the course, a student must be able to

CO 1 Explain system architecture of GSM.

CO 2 Explain concepts of mobile transport layer.

CO 3 Differentiate routing algorithms used in MANET's.

CO 4 Discuss wireless application protocol architecture.

CO 5 Discuss database issues.

UNIT-I **(12 Lectures)**

INTRODUCTION TO MOBILE COMMUNICATIONS AND COMPUTING :

Introduction to MC, Novel applications, Limitations, and Architecture. (Wireless) Medium Access Control :

Motivation for a specialized MAC (Hidden and exposed term

inals, Near and far terminals), SDMA, FDMA, TDMA, CDMA. Wireless LAN(IEEE802.11):

System architecture, Protocol architecture, Basic DFW MAC-DCF using CSMA/CA, DFWMAC with RTS/CTS extensions, DFWMAC-PCF with polling.

GSM :

Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover security

UNIT-II (12 Lectures)

MOBILE NETWORK LAYER :

Mobile IP (Goals, assumptions, Entities and Terminology, IP packet delivery, Agent advertisement and Discovery, Registration, Tunneling and Encapsulation, Optimizations), Dynamic Host Configuration Protocol (DHCP).

MOBILE TRANSPORT LAYER :

Traditional TCP, Indirect TCP Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP.

UNIT-III (12 Lectures)

MOBILE AD HOC NETWORKS (MANETS):

Overview, Properties of a MANET, Spectrum of MANET applications, Routing and various routing algorithms (DSR, DV/ DSDV, AODV, LSR/OLSR, FSR, CGSR, ZRP), Security issues in MANETs.

UNIT-IV (12 Lectures)

WIRELESS APPLICATION PROTOCOL-WAP:

Introduction, Protocol Architecture, Treatment of protocols of all layers.

Bluetooth:

User scenarios, Physical layer, MAC layer, Networking, Security,Link Management. J2ME:Configurations, Profiles, Packages, Midlet life cycle, Display and Displayable Classes, Command Listener and ItemState Listener interfaces.

UNIT-V (12 Lectures)

DATABASE ISSUES :

Hoarding techniques, Caching invalidation mechanisms. Client server computing with adaptation, Location-aware and Context-aware computing. Transactional models in Mobile Communication Systems.

DATA DISSEMINATION:

Communications Asymmetry, Classification of new data delivery

mechanisms, Push-based mechanisms, Pull-based mechanisms, Hybrid mechanisms, Selective tuning (indexing) techniques.

TEXT BOOKS :

1. Jochen Schiller, *"Mobile Communications"*, 2nd Edition, Addison-Wesley, 2004. (Chapters 1-4,7-11)
2. Stojmenovic and Cacute, *"Handbook of Wireless Networks and Mobile Computing"*,1st Edition Wiley, 2002. (Chapters 11, 15,17, 26 and 27)

REFERENCES:

1. Reza Behravanfar, *"Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML"*, 1st Edition, Cambridge University Press, October 2004,
2. Adelstein, Frank, Gupta, Sandeep KS, Richard III, Golden , Schwiebert, Loren, *"Fundamentals of Mobile and Pervasive Computing"*, 1st Edition, McGraw-Hill Professional, 2005.
3. Hansmann, Merk, Nicklous, Stober, *"Principles of Mobile Computing"*, 2nd Edition Springer, 2003.
4. Martyn Mallick, *"Mobile and Wireless Design Essentials"*, 1st Edition, Wiley DreamTech, 2003.

WEB REFERENCES:

1. IETF RFC's. www.ietf.org/
2. NPTEL Course Material. http://textofvideo.nptel.iitm.ac.in/1036/