MOBILE COMMUNICATIONS
(Professional Elective-IV) / (Common to CSE & IT)

Course Code : 15CT1130	L	T	P	C
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Pre-requisites:

Computer Networks

Course Outcomes:

At the end of the Course, the Student will be able to:

CO 1 Explain system architecture of GSM

CO 2 Explain concepts of mobile IP

CO 3 Explain concepts of transport layer

CO 4 Differentiate routing algorithms used in MANETs

CO 5 Discuss wireless application protocol architecture

UNIT-I   (14 Lectures)

INTRODUCTION TO MOBILE COMMUNICATIONS AND COMPUTING:

Introduction to Mobile Communications, Novel Applications, Limitations, Architecture and Simplified Reference model.

MEDIUM ACCESS CONTROL (WIRELESS):

Motivation For a specialized MAC (Hidden and Exposed; near and far terminals), SDMA, FDMA, TDMA, CDMA.

WIRELESS LAN (IEEE 802.11):

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

GLOBAL SYSTEM FOR MOBILE COMMUNICATION:

Mobile Services, System Architecture, Radio Interface, Protocols, Localization and Calling, Handover Security.

UNIT-II   (10 Lectures)

MOBILE NETWORK LAYER:

Mobile IP: Goals, Assumptions, Entities and Terminology, IP Packet Delivery, Agent Advertisement and Discovery, Registration, Tunneling and Encapsulation, Optimization, Dynamic Host Configuration Protocol (DHCP).

UNIT-III   (8 Lectures)

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-IV   (8 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-V   (10 Lectures)

WIRELESS APPLICATION PROTOCOL (WAP):

Introduction, Protocol architecture, Treatment of Protocol of all layers;

BLUETOOTH (IEEE 802.15.1):

User Scenarios, Bluetooth Protocol Architecture: Physical and MAC layer, Networking, Link Management, Security.

J2ME:

Configurations, Profiles, Packages, Midlet life cycle, Display and Displayable Classes, Command Listener and ItemState Listener interfaces.

TEXT BOOKS:

1.   Jochen H Schiller, "Mobile Communications", 2nd Edition, Addison-Wesley, 2004.

2.   Stojmenovic and Cacute, : "Handbook of Wireless Networks and Mobile Computing", 1st Edition Wiley, 2002.

REFERENCES:

1.   Reza Behravanfar, "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML", 1st Edition, Cambridge University Press, October 2004.

2.   Hansmann, Merk, Nicklous, Stober, "Principles of Mobile Computing", 2nd Edition Springer, 2003.

3.   MartynMallick, "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.