Prasad V. Potluri Siddhartha Institute of Technology, Kanuru, Vijayawada.

1/2 M.Tech. SECOND SEMESTER

CSCS2T5A **MOBILE COMPUTING** **Credits: 4**

ELECTIVE – I

Lecture: 4 periods/week **Internal assessment: 30 marks**
Tutorial: 1 period /week **Semester end examination: 70 marks**

Objectives:

Introduction of an advanced element of learning in the field of wireless communication. Expose the students to the concepts of wireless devices and mobile computing.

1. To present necessary concepts for Mobile Communication.
2. Understanding different mobile devices and system.
3. Understanding the Cellular System design.
4. Study Co-channel and Non Co-channel Interference.
5. Understanding channel assignment and hand off.
6. Understand the Database issues as backend.
7. Study Digital Cellular System.

Learning Outcomes:

At the end of this course the student should be able to

1. Understand the concept of mobile computing and architecture of mobile communication.
2. Apply the concepts of mobile communications to the transactions and transaction management.
3. Apply the concepts of mobile computing and conventional wired network and simulate it on the simulator.
4. Understand the working of heterogeneous networks.

UNIT - I

Introduction to Mobile Communications and Computing: Novel Applications, Limitations of Mobile computing, Mobile Devices, Mobile Computing Architecture: Mobile computing Architectural Layers, Protocols.

UNIT - II

GSM and Other Architectures: GSM –Services and System Architecture, Services, Subsystems of GSM Architecture, GSM Architecture. Radio Interfaces of GSM: SDMA, TDMA, FDMA, CDMA, Format of Data Bursts, Traffic and Control Data Channel. Protocols of GSM, Localization, Call Handling, Handover, Security and New Data Services.

UNIT - III

Mobile Network Layer: Mobile IP Network Layer, Packet delivery and handover management, location management, Registration, Tunneling & Encapsulation, Route Optimizations, Reverse Tunneling, DHCP,VOIP,IPSEC(CSE,IPSEC Protocol Field Specifications)

UNIT - IV

Mobile Transport Layer: Conventional TCP/IP Transport layer Protocols, Indirect TCP, Snooping TCP, Mobile TCP Other Methods of Mobile TCP-Layer Transmission, TCP Over 2.5G/3G Mobile Networks.

UNIT - V

Database Issues: Data Base Hoarding Techniques, Database, Database Hoarding at Mobile Device,

Data Caching: Cache Invalidation Mechanism, Data Cache & Web Cache in Mobile Environment, Client-Server Computing with an Adaptation Mechanism: Client Server Computing, Client-server Architecture(2,3,n Tier),Adaptation Software for Mobile Computing, Power aware Mobile Computing, context aware Mobile Computing, content types during Context aware Computing.

UNIT - VI

Data Dissemination: Communication Asymmetry, Data Delivery Mechanisms (Push, Pull, Hybrid) Data Dissemination, Broadcast Models, Selective Turning and Indexing Techniques.

UNIT - VII

Mobile Ad hoc Networks (MANETs): Introduction to Mobile ad-hoc Networks, Properties of MANET, Routing and Routing Algorithms(DSRP,AODV,TORA), Clustered Gateway switch Routing, Flat Routing Table Driven, Introduction to Wireless Sensor Networks, Distributed Network and Characteristics.

UNIT - VIII

Protocols and Tools: Wireless LAN 802.11 Architecture, WAP 2.0,Bluetooth ,Bluetooth Architecture(Layers),J2ME, Introduction to Windows CE, Window Phone 7,Android,Symbian Operating Systems.

Learning Resources

Text book:

1. Mobile Computing, Rajkamal, 2nd Edition, Oxford University Press 2012.

Reference Books:

1. Mobile Communications, Jochen Schiller, 2nd Edition,Pearson,2003.
2. Principles of Mobile Computing, Hansmann, Merk, Nicklous, Stober , Springer, 2nd Edition, 2003.
3. Wireless and Mobile Network Architecture, Yi Bang Lin and Imrich Chlamtech (Wiley).