

**4/4 B.Tech. FIRST SEMESTER**

**IT7T3**

**MOBILE COMPUTING  
(Common to CSE/IT)**

**Credits:4**

**Lecture: 4 periods/week**

**Tutorial: 1 period /week**

**Internal assessment: 30 marks**

**Semester end examination: 70 marks**

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**Objectives:**

Expose the students to

- Present necessary concepts for Mobile Communication.
- The concepts of wireless devices and mobile computing.
- Different mobile devices and smartsystems.
- The Cellular System design.
- TheCo-channel, Non Co-channel Interference, Channel assignment and hand off.
- TheDigital Cellular System.

**Outcomes:**

Student will be able to

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

**Syllabus:**

**UNIT - I**

**Introduction Mobile Communications An overview:** Novel applications, limitations of Mobile Computing, Mobile Devices, Mobile Computing architecture Mobile computing Architectural layers, Protocols.

**UNIT - II**

**Mobile devices and system:** Cellular networks and frequency reuse, mobile smart phones, smart mobiles and systems, handheld pocket computers, handheld devices, smart systems, Limitations of mobile devices.

**UNIT - III**

**GSM and other 2G Architecture:** GSM- Mobile services, System architecture, Radio interface of GSM, Protocols of GSM, Localization, call handling, Handover GPRS system architecture.

#### **UNIT - IV**

**Wireless Medium Access Control, 3G and 4G communication:** Controlling the medium access, Spread spectrum, coding methods, FHSS, CDMA, OFDM, HSPA 3G network, WiMax IEEE 802.16e, Broadband wireless access, 4G networks.

#### **UNIT - V**

**Mobile Network Layer IP and Mobile IP network layer:** OSI layer functions, TCP/IP and Internet protocol, Mobile internet protocol, Packet delivery and Handover management, Location management, agent discovery, Tunneling and Encapsulation, DHCP, Mobile TCP.

#### **UNIT - VI**

**Synchronization:** Synchronization in mobile computing systems, Usage models for Synchronization in mobile application, Domain-dependent specific rules for data synchronization, Mobile Agent.

#### **UNIT - VII**

**Mobile Ad hoc Networks (MANETs):** Fixed infrastructure architecture and MANET infrastructure architecture, Properties of a MANET, Spectrum, Applications, Security in Ad-hoc networks, Wireless Sensor Networks.

#### **UNIT - VIII**

**Mobile Wireless Short Range Networks and Mobile Internet:** Wireless networking and wireless LAN, Wireless LAN Architecture, IEEE 802.11 Protocol Layer, Wireless Application Protocol WAP 1.1 Architecture, Wireless Datagram Protocol (WDP), Wireless Transport Layer Security (WTLS), Wireless Transaction and Session Layers, Wireless Application Environment.

#### **Text Books:**

1. RAJ KAMAL "Mobile Computing", Second edition Oxford publication.

#### **Reference books:**

1. Jochen Schiller, "Mobile Communications", Addison-Wesley, second edition,
2. ASOKE K TALUKDE, HASAN AHMED, OOPA YAVAGAI. "Mobile computing, Technology Application and service Creation", Second Edition, McGraw Hill.