MOBILE COMPUTING

Pre-requisites (if any): Computer Networks and Communication.

Course Objectives:

1. The objective is to be familiar with mobile communication services, impairments, technology to enhance quality & services.
2. Learn the mobile computing architecture.

Module I (6 Hrs)

Overview of Mobile Computing, difference between Mobile computing, ubiquitous computing, pervasive computing, Cellular System, Wireless technologies: Signal propagation ranges, Multiplexing, Modulation and Spread Spectrum techniques, Media access control: Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA.

Module II (7 Hrs)

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), General Packet Radio Services (GPRS): GPRS Architecture, GPRS Network Nodes, Mobile Data Communication; WLANs (Wireless LANs) IEEE 802.II standard.
Mobile Ad hoc Networks (MANETs): Overview, Properties of a MANET, spectrum of MANET applications, routing, and various routing algorithms.

Module III (6 Hrs)

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

Module IV (7 Hrs)

GSM: Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and new data services, Wireless Application Protocol- (Introduction, protocol architecture, and treatment of protocols of all layers), Bluetooth (User scenarios, physical layer, MAC layer, networking, security, link management).

Module V (4 Hrs)

Mobile Computing Architecture and it's parameters, Introduction to 4G and 5G Technologies, Future Trends.

Course Outcomes:

CO1: Be familiar with personal communication services,
CO2: Study global system for mobile communication.
CO3: Learn different layers in the mobile communication.
CO4: Learn mobile computing. And it's application.
CO5: Analyze different challenges in mobile computing.

Essential Reading

1. J. Schiller, " Mobile Communications", 2nd Edition , Pearson, 2008
2. A.K. Talukdar& R.R. Yavgal, "Mobile computing", 2nd Edition, MGH, 2017

Supplementary Reading

1. Mobile and Personal Communication Systems and Services", Raj Pandya, 2nd Edition, Prentice Hall of India, 2001.
2. Raj Kamal, "Mobile Computing", 2nd Edition, Oxford, 2013