

# 20CS014 WIRELESS COMPUTER NETWORKS

Hours Per Week :

L	T	P	C
3	-	-	3

Total Hours :

L	T	P	WA/RA	SSH/HSB	CS	SA	S	BS
45	-	-	15	30	-	5	5	-

## Course Description and Objectives:

This course offers an insight into the concepts of wireless data communication technologies. The objective of this course is to enable the student to understand the emerging technologies of wireless and mobile communications

### Course Outcomes:

Upon the Completion of the course, students will be able to:

- ✓ Understand the new trends in mobile/wireless communications networks.
- ✓ Understand multiple radio access techniques.
- ✓ Analyze various routing algorithms used in mobile/wireless networks.
- ✓ Identify the issues in transport and application layers.

## SKILLS:

- ✓ Design and simulate an ad hoc network for real-time applications.
- ✓ Develop routing algorithms using NS2.
- ✓ Simulate MAC scheduling algorithms using NS2.
- ✓ Simulate applications for specific QoS parameters.

### UNIT - I

Introduction: Mobile Communications and computing : Mobile Communications - Introduction to Mobile Communications, Novel applications, Reference Model, Frequencies of Radio Transmission, Antennas, Signal Propagation, Multiplexing, Spread Spectrum, Modulation.

### UNIT - II

Mobile Telecommunications Systems: GSM – Mobile Services , System Architecture, Protocol Architecture, Localization and calling , Handover, Security Services, GPRS Architecture, UMTS Architecture.

### UNIT - III

Wireless Medium Access Control: Motivation for a specialized MAC, SDMA, FDMA, TDMA , CDMA. Mobile Network layer – Mobile IP: Goals , assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery , registration, tunneling and encapsulation, Dynamic Host configuration Protocol (DHCP).

### UNIT - IV

Mobile transport layer – traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/ fast recovery, Transmission / timeout freezing , Selective retransmission, Transaction oriented TCP. Mobile Ad Hoc Networks(MANET): Overview, Properties of a MANET, spectrum of MANET applications, **Routing Protocols**: Design issues, Goals and classification, DSR, DSDV, AODV.

### UNIT - V

Wireless Application Protocol – WAP: Introduction, Architecture, and treatment of protocols of all layers, Bluetooth: User scenarios, physical layer, MAC layer, networking, security, link management.

### TEXTBOOKS:

1. Jochen Schiller, Mobile Communications, Addison-Wesley, Second edition, 2008.
2. C.Siva Ram Murthy and B.S.Manoj, "Adhoc Wireless Networks Architectures and Protocols", Pearson Education, 2<sup>nd</sup> edition, 2007.

### REFERENCEBOOKS:

1. William Stallings, "Wireless Communications and Networks", Prentice Hall of India / Pearson Education, 2<sup>nd</sup> edition, 2007.
2. UweHansmann, LotharMerk, Martin S Nicklons and Thomas Stober, "Principles of Mobile Computing", Springer International, 2<sup>nd</sup> edition, 2007.
3. Raj Kamal, "Mobile Computing", Oxford University Press, 2<sup>nd</sup>edition, 2007.
4. Dharma P Agarwal and Carlos Cordeiro, "Adhoc and Sensor Networks - Theory and Applications", World Scientific Publications, 1<sup>st</sup> edition, 2007.