

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Computer Science & Information Technology, VI-Semester

Departmental Elective CSIT- 603 (A) Wireless and Mobile Computing

Course Objectives:

To explain the various terminology, principles, devices, schemes, concepts, algorithms and different methodologies used in Wireless Communication Networks. To enable students to compare and contrast multiple division techniques, mobile communication systems, and existing wireless networks.

Course Outcomes:

1. Explain the basic concepts of wireless network and wireless generations.
2. Demonstrate the different wireless technologies such as CDMA, GSM, GPRS etc.
3. Explain the design considerations for deploying the wireless network infrastructure.
4. Appraise the importance of Adhoc networks such as MANET and Wireless Sensor networks.
5. Differentiate and support the security measures, standards. Services and layer wise security considerations.

Course Contents:

UNIT I:

Antenna, radiation pattern, antenna types, antenna gain, propagation modes, types of fading. Model for wireless digital communication, multiple access technique-SDMA, TDMA, FDMA, CDMA, DAMA, PRMA, MAC/CA, Cellular network organization, operations of cellular system, mobile radio propagation effects, handoff, power control, sectorization, traffic engineering, Infinite sources, lost calls cleared, grade of service, poison arrival process.

UNIT II:

GSM- Services, system architecture, radio interface, logical channels, protocols, localization and calling, handover, security, HSCSD, GPRS-architecture, Interfaces, Channels, mobility management DECT, TETRA, UMTS.

UNIT III:

IEEE 802.11: LAN-architecture, 802.11 a, b and g, protocol architecture, physical layer, MAC layer, MAC management, HIPERLAN-protocol architecture, physical layer, access control sub layer, MAC sub layer. Bluetooth-user scenarios- physical layer, MAC layer.

UNIT IV:

Mobile IP, DHCP, Ad hoc networks: Characteristics, performance issue, routing in mobile host. Wireless sensor network, Mobile transport layer: Indirect TCP, Snooping TCP, Mobile TCP, Time out freezing, Selective retransmission, transaction oriented TCP. Introduction to WAP.

UNIT V:

Intruders, Intrusion detection, password management, viruses and related threads, worms, trojan horse defense, difference biometrics and authentication system, firewall design principle.

Recommended Books:

1. J. Schiller, "Mobile Communication", Addison, Wiley.
2. William Stallings, "Wireless Communication and Network", Pearson Education.
3. Upena Dalal, "Wireless Communication", Oxford Higher Education.
4. Dr. Kamilo Feher, "Wireless Digital communication", PHI.
5. William C.Y Lee, "Mobile Communication Design Fundamental", John Wiley.
6. Stojmenic Ivan, Handbook of Wireless Networks and Mobile Computing, John Wiley and Sons Inc 2002.
7. Yi Bing Lin and Imrich Chlamtac, Wireless and Mobile Network Architectures, John Wiley and Sons Inc 2000
8. Pandya .aj, Mobile and Personal Communications Systems and Services, PHI 2004.