

5th Semester	RCS5D003	Mobile Computing	L-T-P 3-0-0	3 Credits
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Objectives

- To understand the fundamentals of mobile communication.
- To understand the architecture of various Wireless Communication Networks.
- To understand the significance of different layers in mobile system

Module I:**(10 Hours)**

Introduction to Wireless Networks – Applications – History – Simplified Reference Model – Wireless transmission – Frequencies – Signals – Antennas – Signal propagation – Multiplexing – Modulation – Spread spectrum – Cellular Systems: Frequency Management and Channel Assignment- types of hand-off and their characteristics.

Module II:**(10 Hours)**

MAC – Motivation – SDMA, FDMA, TDMA, CDMA –Telecommunication Systems – GSM: Architecture-Location tracking and call setup- Mobility management- Handover- Security- GSM SMS –International roaming for GSM- call recording functions-subscriber and service data management – DECT – TETRA – UMTS – IMT-2000.

Module III:**(8 Hours)**

Wireless LAN – Infrared Vs Radio transmission – Infrastructure – Adhoc Network –IEEE 802.11 WLAN Standards – Architecture – Services– HIPERLAN – Bluetooth Architecture & protocols.

Module IV:**(8 Hours)**

Mobile Network Layer – Mobile IP – Dynamic Host Configuration Protocol - 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 V:**(4 Hours)**

WAP Model- Mobile Location based services -WAP Gateway –WAP protocols – WAP user agent profile- caching model-wireless bearers for WAP - WML - WML Scripts - WTA – iMode – SyncML

Outcomes

- Ability to develop a strong grounding in the fundamentals of mobile Networks
- Ability to apply knowledge in MAC, Network, and Transport Layer protocols of Wireless Network
- Ability to comprehend, design, and develop a lightweight network stack

Books:

- [1] Jochen Schiller, “ Mobile Communication”, 2nd Edition, Pearson Education, 2009.
- [2] Theodore and S. Rappaport, “Wireless Communications, Principles, Practice”, 2nd Ed PHI, 2002
- [3] William Stallings, “Wireless Communications and Networks”, 2nd Edition, Pearson Education, 2004

Digital Learning Resources:

Course Name: Mobile Computing
 Course Link: <https://nptel.ac.in/courses/106/106/106106147>
 Course Instructor: Prof. Pushpendra Singh and Prof. S. Iyer, IIT, Madras