



# SYLLABUS

<b>Course Title</b>	<b>Wireless Technology</b>
<b>Course Code</b>	<b>MCAL307</b>
<b>Course Credit</b>	Theory(Hrs) : 3
	Practical(Hrs) : 0
	Tutorial(Hrs) : 0
	Credits : 3

## Course Objectives

The main objectives of the course are:

- To understand the generations of mobile communication systems
- To learn the concepts of digital cellular system
- To identify the process of various ideal wireless systems from data in to data out
- To understand the planning of wireless network and emerging technologies
- To learn various existing architecture and infrastructure of wireless systems

## Detailed Syllabus

<b>Sr. No.</b>	<b>Name of chapter &amp; details</b>	<b>Hours Allotted</b>
<b>Section – I</b>		
<b>1</b>	<b>Wireless Technologies Fundamental</b> Introduction to Wireless Technology, History of Wireless Communication, Types of Wireless Network, Generations : 1G, 2G, 3G and 4G networks, Multiplexing, Modulations – ASK, FSK, PSK	<b>05</b>

<b>2</b>	<b>Physical layer and Medium Access Alternatives</b> Short distance baseband transmission, UWB transmission, Digital Cellular transmission, Spread Spectrum Transmission, Fixed Assignment Access – FDMA, TDMA, CDMA, Random access for data oriented networks	<b>06</b>
<b>3</b>	<b>Network Planning and Emerging Technologies</b> Wireless Network Topologies, Cell fundamentals and topologies, Bluetooth, Radio Frequency Identification (RFID), WIMAX,	<b>06</b>
<b>4</b>	<b>Wireless LAN</b> Introduction, IEEE 802.11 Standards, WLAN Architecture, 802.11 Layers, 802.11 Packet Format, Mobility in WLAN, Deploying WLAN, Mobile Ad hoc Network and Sensor Network, Wireless LAN Security, Wireless Local Loop	<b>05</b>

### Section – II

<b>5</b>	<b>Digital Cellular System Infrastructure</b> Global System for Mobile Communication, GSM Architecture, GSM Components, Call Setup in GSM, Short Message Services, Mobile Originated Messaging, Mobile Terminated Messaging, Value added services through SMS, Multimedia Message Services, IS-95, CDMA 2000	<b>10</b>
<b>6</b>	<b>General Packet Radio Service</b> Introduction, GPRS Architecture, GPRS Classes, Protocol Suite, Mobility Management in GPRS, Billing and Charging of GPRS	<b>06</b>
<b>7</b>	<b>Mobile Computing</b> Mobile Computing – Introduction, Dimensions, Characteristics, Architecture, Working with Mobile IP, Mobile IP Entities, Mobile IP Operations, Introduction to WAP, WAP Architecture, WAP Protocols	<b>06</b>

#### **Instructional Method and Pedagogy:**

- Lectures will be conducted on the basis of Classroom Response Systems with the use of multimedia projector and black board.
- Assignments based on course contents will be given at the end of each unit/topic and will be evaluated at regular interval.

### Course Learning Outcomes:

On the completion of the course, students will be able to:

- **Identify** different wireless network terminology
- **Recognize** various technologies present in wireless networks
- **Analyze** local area wireless network technologies, their security and weaknesses
- **Identify** the role of physical layer protocols and various signaling and encoding used in wireless LANs
- **Understand** how data is transmitted with various techniques in wireless networks

### Text books:

- Title: Mobile Computing, Tata McGraw-Hill  
Author(s) : Asoke Talukder, Roopa R Yavagal

### Reference Books:

- Title : Mobile Communications, Addison-Wesley, 2003  
Author(s): J. Schiller
- Title : Principles of Wireless Networks, Prentice Hall PTR, 2002  
Author(s) : Kaveh Pahlavan
- Title : Mobile Computing, Oxford University Press, 2007  
Author(s) : Raj Kamal

### Additional Resources

- Handbook of Wireless Network and Mobile Computing, Ivan Stojmenovic
- <http://www.techrepublic.com/topics/wireless+technology>
- <http://www.wirelessimpacts.org/resources.html>