

COURSE TITLE: MOBILE COMMUNICATION AND WIRELESS TECHNOLOGY**COURSE OBJECTIVES:**

- To learn the concepts of wireless communication and mobile networks
- To identify different wireless technologies and its applications
- To acquire knowledge on generation of cellular networks and its standards used

LEARNING OUTCOMES:

The students will be able to:

- Understand the concept of cellular communications, advantages and its limitations
- Compare the various wireless technologies and its applications
- Apply the appropriate technology in the applications

Code	Course	Teaching Period / Week		Credit			Duration of Theory Exam (in Hrs.)
		L	Pr./ Tu	Int.	Ext.	Total	
MCS201	Mobile Communication and Wireless Technology	4	-	2	2	4	2

Module No.	Objective	Content	Evaluation
1	To introduce to basic concepts of wireless networking	Fundamentals of Wireless Technology Introduction to Mobile and wireless communications, Overview of radio transmission frequencies, Signal Antennas, Signal Propagation, Multiplexing – SDM,FDM, TDM,CDM, Modulation – ASK,FSK,PSK, Advanced FSK, Advanced PSK, OFDM, Spread Spectrum – DSSS,FHSS, Wireless Transmission Impairments – Free Space Loss, Fading, Multipath Propagation, Atmospheric Absorption, Error Correction – Reed Solomon, BCH, Hamming code, Convolution Code (Encoding and Decoding)	Students will be evaluated by taking viva. (Marks 05)
2	To elaborate wireless and cellular wireless network	Wireless and Cellular wireless Networks Wireless network, Wireless network Architecture, Classification of wireless networks – WBAN, WPAN, WLAN, WMAN, WWAN., IEEE 802.11, IEEE 802.16, Bluetooth – Standards, Architecture and Services, Cellular wireless Networks, Principles of cellular networks – cellular network organization, operation of cellular systems, Handoff., Generation of cellular networks – 1G, 2G, 2.5G, 3G and 4G.	Written Unit Test – I (Marks 25)
3	To elaborate the concept of mobile	Mobile Communication System GSM – Architecture, Air Interface, Multiple Access Scheme, Channel Organization, Call Setup Procedure, Protocol Signaling, Handover, Security, GPRS –	Written Class Test will be conducted. (Marks 10)

	communication system	Architecture, GPRS signaling, Mobility management, GPRS roaming, network, CDMA2000- Introduction, Layering Structure, Channels, Logical Channels, Forward Link and Reverse link physical channels, W-CDMA – Physical Layers, Channels, UMTS – Network Architecture, Interfaces, Network Evolution, Release 5, FDD and TDD, Time Slots, Protocol Architecture, Bearer Model, Introduction to LTE	
4	To elaborate different layers of mobile network	Mobile network, transport and application layers Mobile IP – Dynamic Host Configuration Protocol, Mobile Ad Hoc Routing Protocols– Multicast routing, TCP over Wireless Networks – Indirect TCP – Snooping TCP – Mobile TCP – Fast Retransmit / Fast Recovery Transmission/Timeout Freezing-Selective Retransmission – Transaction Oriented TCP , TCP over 2.5 / 3G wireless Networks, WAP Model- Mobile Location based services - WAP Gateway –WAP protocols – WAP user agent profile, Caching model-wireless bearers for WAP - WML – WMLScripts – WTA.	Assignments will be given for the above topics. (Marks 10)

EVALUATION:

Evaluation	Details	Marks
(* please give details of assessment in terms of Unit test/ Project/ quiz /or other assignments and marks allotted for it)		
Internal	<ul style="list-style-type: none"> • Unit test • Viva Test • Class Test • Assignments 	50 Marks
External	Final Examination	50 Marks
Total marks		100 Marks

TEXT BOOKS:

- 1) Saha Misra (2010), *Wireless Communications and Networks, 3G and Beyond*, Second Edition, McGraw Hill Education
- 2) Vijay K. Garg, *Wireless Network Evolution 2G to 3G*, (2011), Pearson Publications.

REFERENCE BOOKS:

- 1) Yi Bang Lin, Imrich Chlamtac, *Wireless and Mobile Network Architectures*, Wiley India.
- 2) Dr. Sunilkumar S. Manvi, Mahabaleshwar S. Kakkasageri, *Wireless and Mobile Networks, Concepts and Protocols*, Wiley India
- 3) K. Fazel, S. Kaiser, (2010), *Multi-Carrier and Spread Spectrum Systems - From OFDM and MC-CDMA to LTE and WiMAX*, Second Edition, Wiley publications
- 4) Yi-Bing Lin, Ai-Chun Pang, (2012), *Wireless and Mobile All-IP Networks*, Wiley Publications