COURSE TITLE : WIRELESS COMMUNICATION NET WORKS
COURSE CODE : 5103
COURSE CATEGORY : E
PERIODS/WEEK : 4
PERIODS/SEMESTER : 72
CREDITS : 4

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Satellite Communication	17
	Test I	1
2	Mobile Communication	17
	Test II	1
3	Digital carrier modulation	17
	Test III	1
4	Wireless Systems and Standards	17
	Test IV	1
	TOTAL	**72**

OBJECTIVES

MODULE – I: Satellite Communication

1.1.1 Give an over view of satellite communication
1.1.2 Explain passive and active satellites
1.1.3 Describe communication satellite orbit
1.1.4 Discuss different orbits- Leo, Meo, Geo
1.1.6 Discuss Kepler's law, Apogee and Perigee
1.1.7 Describe satellite frequencies
1.1.8 Explain station keeping
1.1.9 Explain satellite Earth station
1.1.10 Explain satellite Onboard
1.1.11 Describe Dish antenna reception
1.1.12 Describe a satellite digital receiver
1.1.14 Give applications of satellite (GIS & GPS)

MODULE II: Mobile Communication

2.1.1 Understand the cellular concept
2.1.2 Understand evolution of Mobile Communication Systems- 1G, 2G, 2.5G, 3G and 4G
2.1.3 Discuss Cellular Telephone systems
2.1.4 Understand Frequency reuse
2.1.5 Discuss Channel assignment strategies
2.1.6 Understand Hand off strategies
2.1.7 Define Grade of Service
2.1.8 Undesrtand the basic idea about GPRS and EDGE
2.1.9 Explain the role, frequencies used, advantages etc of WLL
2.1.10 Understand mobile IP
2.1.11 Explain Wireless LAN. Discuss its applications

MODULE– III : Digital carrier modulation

3.1. Understand the concept of Band pass data Transmission Systems

3.1.1 Discuss BPSK system
3.1.2 Explain Spectrum and bandwidth of BPSK system

3.1.3 Explain QPSK system and its spectrum
3.1.4 Expalin BFSK system and its spectral properties
3.1.5 Discuss MSK system
3.1.6 Understand Gaussian Minimum Shift Keying

3.2. Discuss Spread Spectrum Modulation Techniques

3.2.1 Explain DS-SS
3.2.2 Explain FH-SS

MODULE IV : Wireless Systems and Standards

4.1.1 Discuss the various Multiple access methods – FDMA, TDMA and CDMA, SDMA
4.2.1 Understand GSM architecture
4.2.2 Discuss GSM radio subsystem
4.2.3 Discuss the GSM Channel types and frame structure
4.2.4 Mention the call flow sequence in GSM
4.2.5 Understand CDMA digital cellular standard
4.2.6 Discuss forward and reverse channels
4.2.7 List the advantages of CDMA
4.3.1 Discuss the concept of Wi-fi
4.3.2 Explain the features and applications of Wi-Max
4.3.3 Compare Wi-fi & Wi-Max
4.3.4 Discuss the principle of operation of Blue tooth

CONTENT DETAILS

MODULE I :Satellite Communication Systems

Introduction, passive and active satellites, Communication satellite orbits, satellite frequencies – up link and down link , transponder, station keeping, Earth station, Satellite onboard, Dish antenna reception, satellite digital receiver. GIS and GPS

MODULE II : Mobile Communication

Mobile phone generations, Cellular telephone system – mobile stations, base stations and MSC-how a call is made –. The cellular concept, frequency reuse, channel assignment, strategies, grade of service, GPRS and EDGE, WLL, mobile IP, Wireless LAN.

MODULE III : Digital Carrier Modulation

Introduction, Elements of Band Pass Data Transmission system, Coherent Binary Signaling Scheme – BPSK- Generation and detection, QPSK - Generation and detection, BFSK- transmitter and receiver-spectrum, MSK-transmitter, receiver and spectrum, Gaussian Minimum Shift Keying.
Spread Spectrum Modulation Techniques -DS-SS, FH-SS

MODULE IV Wireless Systems and Standards

Multiple access methods – FDMA, TDMA and CDMA.
GSM system architecture, GSM radio subsystem, GSM channel types, GSM frame structure, Example of a GSM call. CDMA Digital Cellular Standard – frequency and channel specification, forward and reverse channels.
WiFi-Concept, Wi-Max – features and applilcations, compare WiFi and Wi-Max, Bluetooth- principles of operation

REFERENCES:

1. Satellite Communication - Roddy
2. Satellite Communication - Timothy Pratt
3. Wireless Communications, Principles and Practice : Rappaport
4. Wireless Communications : Lee
5. Mobile and personal communication systems and service Raj Pandya

6. Digital Communications : Sklar
7. An introduction wireless Technology : Gary S.Rogers, John Edwards
8. Satellite Communications : Agarwall
9. Mobile Communication : G K Behera