GANPAT UNIVERSITY									
FACULTY OF TECHNOLOGY									
Programme	Bachelor of Technology					Branch/Spec.	Computer Science & Engineering (CBA)		
Semester	VII					Version	1.1.1.0		
Effective from Academic Year			2018 – 19			Effective for the batch Admitted in			June 2016
Subject code	2CSE70E6		Subject Name			WIRELESS NETWORKS			
Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	2	0	5	Theory	40	60	100
Hours	3	0	4	0	7	Practical	60	40	100

Pre-requisites:

Computer Network

Learning Outcome:

After learning the course the students should be able to:

- Understand the fundamentals concepts of wireless communicationand IEEE standards
- Understand the architecture of GSM and GPRS, call routing and internet access through mobile device
- Learn to simulate wireless networks and analyze the simulation results
- Demonstrate knowledge of programming for wireless network communications

Theory syllabus

Unit	Content	Hrs
1.	**Introduction, Transmission Fundamentals:** Signals for Conveying Information, Analog and Digital Data Transmission, Channel Capacity, Transmission Media, Multiplexing **Communication Networks:** LANs, MANs andWANs,SwitchingTechniques,CircuitSwitching,Packet Switching, **Protocols and the TCP IP Suite-** The Need for a Protocol Architecture, The *TCP/IP* Protocol Architecture, The OSI Mo del, Internetworking	6
2.	**Cellular Wireless Networks:** Principles of Cellular Networks,First-Generation Analog Second-Generation TDMA Second-Generation CDMA,Third-Generation Systems **Antennas and Propagation:** Antennas, Propagation Modes, Line-of-Sight Transmission, Fading in the Mobile Environment **Modulation Techniques:** Signal Encoding Criteria, Digital Data- Analog Signals, Analog Data-Analog Signals, Analog Data-Digital Signals **Spread Spectrum:** The Concept of Spread Spectrum,Frequency Hopping Spread Spectrum,Direct Sequence Spread Spectrum,Code Division Multiple Access, **Coding and Error Control:** Error Detection, Block Error Correction Codes , Convolutional Codes, Automatic Repeat Request	8
3	**Multiple access in Wireless System:** Multiple access scheme, frequency division multiple access, Time division multiple access, code division multiple access, space division multiple access, packet radio access, multiple access with collision avoidance. **Global System for Mobile Communication:** Global system for mobile communication, GSM architecture, GSM entities, call routing in GSM,PLMN interface, GSM addresses and identifiers, network aspects in GSM,GSM frequency allocation, authentication and security **General Packet Radio Service(GPRS):** GPRS and packet data network, GPRS network architecture, GPRS network operation, data services in GPRS, Applications of GPRS, Billing and charging in GPRS **Wireless System Operations And Standards:** Cordless Systems,Wireless Local Loop, WiMAX and IEEE 802.16 Broadband Wireless Access Standards , Mobile IP and Wireless Application Protocol	10

4	**Wi-Fi and the IEEE 802.11 Wireless LAN Standard**: IEEE 802 architecture, IEEE 802.11 architecture and services, IEEE 802.11 Medium access control, IEEE 802.11 physical layer, Wi-Fi protected access.	7
5	**Bluetooth:** Radio specification, baseband specification, link manager specification, logical link control and adaption protocol	5
6	**Android Fundamentals:** Android APIs, Android Architecture, Application Framework, The Application components, The manifest file, downloading and installing Android, Exploring the Development Environment, Developing and Executing the first Android application, Working with Activities, The LinearLayout Layout, The RelativeLayout Layout, The ScrollView Layout, The TableLayout Layout, The FrameLayout Layout, Using the TextView, EditText View, Button View, RadioButton, CheckBox, ImageButton, RatingBar, The options Menu, The Context Menu.	8

Practical List

- Experiments based on GSM (Using Wireless Communication Trainer)
- Experiment based on Spread spectrum using Signal Generator and spectrum Analyser
- Write a program that identifies the bluetooth devices in the wireless range
- Write a program to simulate Fixed Time Division Multiplexing
- To perform and study the microstrip antenna showing its radiation characteristics, beam width and bandwidth.
- Write a program that prints the signal strength of WiFi connection of the given computer
- Prepare a wireless ad hoc network and show its working.
- Write a program to find hamming distance.
- Write a program to perform infrared communication.
- Write a program to perform Bluetooth file transfer.

Text Books

1.	Wireless Communications & Networks, Second Edition,William Stallings by Pearson
2.	Mobile ComputingTechnology,Applications and service creation ,Asoke K Telukder, Roopa R Yavagal by TMH

Reference Books

1	Android Application Development Black Book, Pradeep Kothari, dreamtech press
2	Wireless and mobile networks, Dr.Sunilkumar S. Manvi, Dr.MahabaleshwarS.Kakkasageri by WILEY
3	Mobile Computing,Raj Kamal by Oxford