GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	B.Sc. IT (Infrastructure Management Services) (Hons.)	**Branch/Spec.**	Computer Applications
Semester	III	**Version**	1.0.0.0
Effective from Academic Year	2025-26	**Effective for the batch Admitted in**	June 2024
Subject Code	U43E6IWT	**Subject Name**	Introduction to Wireless Technology

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	2	-	-	-	2	Theory	25	25	50
Hours	2	-	-	-	2				

Objective:

Understand the basic principles of wireless communication and learn about different wireless technologies and standards.

Pre-requisites:

Basic knowledge of telecommunications and networking.

Course Outcomes :

Name of CO	**Description**
CO1	Students will be able to explain the basic principles and concepts of wireless communication systems.
CO2	Learn the essentials for designing, implementing, and optimizing efficient wireless communication systems. .
CO3	Understand and apply various channel access methods.
CO4	understand and implement the components of 802.11 network security, identify various wireless attacks.

Mapping of CO and PO

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	3	3	3	1	1	3	2	1	3	1
CO2	0	2	2	1	3	0	2	1	3	2	2	1
CO3	1	1	3	1	2	1	1	2	3	2	2	1
CO4	3	3	2	2	3	1	2	2	2	1	3	1

Theory Syllabus

Unit	**Content**	**Hrs.**

1	**Overview of Wireless, Radio Frequency:** **Introduction to Wireless Communication:** Overview of wireless communication systems, Types of Wireless Communication System, **Fundamentals of Wireless Communication:** basics of RF signals, RF characteristics, RF components and Modulation techniques (AM, FM), **Wireless Communication Technologies:** Cellular networks (2G, 3G, 4G, and 5G) ,Wi-Fi (IEEE 802.11 standards), Bluetooth and personal area networks (PANs).	**10**
2	**Spread Spectrum technologies, Antennas and Propagation:** **Spread Spectrum technologies**: ISM bands, UNII, FHSS, DSSS, **Antennas and Propagation**: Types of antennas and their characteristics, Antenna design and placement.	**7**
3	**Wireless Medium Access Control (MAC) Protocols and Wireless Network Architecture:** **Channel access methods:** FDMA, TDMA, CDMA, OFDMA, **Wireless Network Architecture:** Infrastructure-based vs. ad-hoc networks, WLAN architecture and components, IEEE 802.11 standards for WLAN.	**8**
4	**Network Security Architecture, Wireless Attacks:** Components of 802.11 network security, Infrastructure Security, wireless attacks, WEP.	**5**
Text Books:		
1	CWNA By David D.Coleman and David A. Westcott- Wiley Publishing,Inc.	
2	Wireless Communications: Principles and Practice by Theodore S. Rappaport.	
3	CWNA_labbook By David Davis-Train Signal, Inc Publisher.	
4	Wireless Communication Networks and Systems by Cory Beard and William Stallings.	
Reference Books:		
1	Wireless Communications and Networks by William Stallings.	
2	Fundamentals of Wireless Communication by David Tse and Pramod Viswanath.	
3	Wireless Networking: Understanding Internetworking Challenges" by Anurag Kumar, D. Manjunath, and Joy Kuri.	
Web References / MOOC / Certification Course:		
1	https://www.coursera.org/learn/wireless-communications	
2	https://www.khanacademy.org/science/electrical-engineering	
3	https://www.udemy.com/topic/cisco-ccna/	
Question Paper Scheme:		
	University Examination Duration: 1 Hour **Paper Structure:** Q-1 Must be from Unit 1 & 2: Any One out of Two **(05 Marks)** (CO1, CO2) Q-2 Must be from Unit 1: Any One out of Two **(05 Marks)** CO1 Q-3 Must be from Unit 2: Any One out of Two **(05 Marks)** CO2 Q-4 Must be from Unit 3: Any One out of Two **(05 Marks)** CO3 Q-5 Must be from Unit 4: Any One out of Two **(05 Marks)** CO4	