Course Name: Wireless Technologies **Course Code: ITEC 353**

General Information						
Course Code	**ITEC 353**	**Level/Year**	**6th/3rd**	**Required (R) / Selected Elective (SE)**		**R**
Credit Hours	**Theory**	**2**	**Lab**	**1**	**Total**	**3**
Prerequisites	**ITEC 251**	**Course Coordinator**		**Ms.Vidya Sivalingam**		
Corequisites	**--**	**Track Leader**		**Dr. Ali Tahir**		

Course Description

This course provides a comprehensive overview of wireless communication technologies and their applications. Students will explore the principles and practices of wireless networking, including thedesign, implementation, and management of wireless systems. Key topics include radio frequency(RF) fundamentals, wireless standards and protocols, network security, and the integration of wireless technologies with existing network infrastructures. The course also covers emerging trendsin wireless communication, such as 5G, Internet of Things (IoT), and wireless sensor networks.Through hands-on labs and real-world case studies, students will gain practical experience in configuring and troubleshooting wireless networks. By the end of the course, students will be equipped with the knowledge and skills necessary to design, deploy, and manage wireless communication systems in various IT environments.

Course Objectives : On completion of the course, the student will be able to:

- Gain a thorough understanding of the fundamental principles and concepts of wireless communication.
- Study various wireless standards, protocols, including Wi-Fi, Bluetooth, and cellular networks, and security requirements.
- Learn the basics of radio frequency (RF) technology and its applications in wireless communication.
- Develop skills in designing and implementing wireless networks for different environments.
- Apply security measures, and security best practices to protect wireless networks from threats and vulnerabilities.
- Learn to integrate wireless technologies with existing wired network infrastructures.
- Explore emerging trends and technologies in wireless communication, such as 5G, IoT, and wireless sensor networks.

Course Contents

List of Topics	**Weeks**
CH 1: Fundamental Principles and Concepts of Wireless Communication	1,2,3
CH 2: Wireless Standards, Protocols, & RF Technology and its Applications	4,5,6
CH 3: Designing Implementing, and Integrating Wireless Networks	7,8,9
CH 4: Emerging Trends, Technologies, and Security Requirements	10,11,12
CH 5: Security Measures, and Best Security Practices to Protect Wireless Networks	13,14,15

Textbook

- Wireless Communication Networks and Systems, 1st Edition, By William Stallings, Pearson, 2015,ISBN 10: 1292108711, ISBN 13: 9781292108711.
- Guide to Wireless Communications, 4th Edition, By Olenewa, Course Technology, 2017, ISBN 10:1305958535, ISBN 13: 9781305958531.
- Wireless Communications, 1st Edition, By Bin Tian, de Gruyter, 2024, ISBN 10: 3110751356, ISBN 13: 9783110751352

Reference Materials

- Wireless Communication Network Technology and Evolution, 1st Edition, By Shilin Wang, YunfeiCai, Youyun Xu, Yuanyang Cai, 2022, World Scientific Pub, ISBN 10: 9811245053, ISBN 13:9789811245053.
- Enterprise Wireless Local Area Network Architectures and Technologies, 1st Edition, By Rihai Wu,2022, CRC Press, ISBN 10: 0367698757, ISBN 13: 9780367698751.

Course Learning Outcomes

CLO	Description	Mapped PI
CLO#01	Define the fundamental principles and concepts of wireless communication.	PI 1.1
CLO#02	Explain the basics of radio frequency technology and its applications in wireless communication.	PI 1.2
CLO#03	Identify various wireless standards, protocols, including Wi-Fi, Bluetooth, and cellular networks, and security requirements.	PI 1.3 PI 6.1
CLO#04	Compare emerging trends and technologies in wireless communication, such as 5G, IoT, and wireless sensor networks.	PI 2.2
CLO#05	Design and implement wireless networks for different environments as well as integrating them with existing wired network infrastructures.	PI 2.1 PI 2.3
CLO#06	Apply security measures, and best security practices to protect wireless networks from threats and vulnerabilities.	PI 6.3 PI 6.4

CLO-PI-SO Mapping

	SO-1	SO-2	SO-3	SO-4	SO-5	SO-6
CLO#01	PI 1.1					
CLO#02	PI 1.2					
CLO#03	PI 1.3					PI 6.1
CLO#04		PI 2.2				
CLO#05		PI 2.1,PI 2.3				
CLO#06						PI 6.3, PI 6.4