WIRELESS LANS AND PANS

I Semester: **ECE(ES)**								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maximum Marks**		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
BESC06	**ELECTIVE**	3	0	0	3	30	70	100
Contact Classes: 45	**Tutorial Classes: Nil**	**Practical Classes: Nil**				**Total Classes:45**		

I. COURSE OVERVIEW:

This course intended to provide wireless network communication over short distances using radio or infrared signals instead of traditional network cabling. The basic knowledge of the wireless system, IEEE standards, network architecture, and its protocols. It focuses on data transmission among devices such as computers, smart phones, tablets, and personal digital assistants.

II. COURSE OBJECTIVES:

The students will try to learn:

I. The basic concepts of wireless LANs and comparison of wired and wireless LANs
II. Network architecture using a physical layer and the medium access control layer and issues.
III. The function of the IEEE 802.15 working group for WPANs

III. COURSEOUTCOMES:

After successful completion of the course, students should be able to:

CO 1	**Recall** the generations of cellular systems for understanding theconnectivity of wireless communication networks.	Understand
CO 2	**Organize** the random-access protocols to decrease collision andavoid crosstalk.	Apply
CO 3	**Justify** the importance of wireless LANs for connecting differentdevices through wireless communication to form an area network.	Evaluate
CO 4	**Estimate** the wireless PANs for interconnecting electronicdevices within an individual person's workspace.	Evaluate
CO 5	**Analyze** the traffic engineering used to carry traffic flows thatvary from those chosen automatically by the routing protocol.	Analyze
CO 6	**Interpret** the wireless networking standards and protocols forwireless transmission approved by IEEE.	Analyze

IV. SYLLABUS:

MODULE-I: WIRELES SYSTEM & RANDOM-ACCESS PROTOCOLS (9)

Introduction, First- and Second-Generation Cellular Systems, Cellular Communications from 1G to3G, Wireless4Gsystems, The Wireless Spectrum; Random Access Methods: Pure ALOHA, Slotted ALOHA, Carrier Sense Multiple Access (CSMA), Carrier Sense Multiple Access with Collision Detection (CSMA/CD), Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA).

MODULE-II: WIRELESS LANS (9)

Introduction, importance of Wireless LANs, WLAN Topologies, Transmission Techniques: Wired Networks, Wireless Networks, comparison of wired and Wireless LANs; WLAN Technologies: Infrared technology, UHF narrowband technology, Spread Spectrum technology.

MODULE-III: THE IEEE802.11 STANDARD FOR WIRELESS LANS (9)

Network Architecture, Physical layer, The Medium Access Control Layer;

MAC Layer issues: Hidden Terminal Problem, Reliability, Collision avoidance, Congestion avoidance, Congestion control, Security, The IEEE802.11eMACprotocol.

MODULE-IV: WIRELESS PANS (9)

Introduction, importance of Wireless PANs, The Bluetooth technology: history and applications, technical overview, the Bluetooth specifications, piconet synchronization and Bluetooth clocks, Master-Slave Switch; Bluetooth security; Enhancements to Bluetooth: Bluetooth interference issues, Intra and Inter Piconet scheduling, Bridge selection, Traffic Engineering, QoS and Dynamics Slot Assignment, Scatter net formation.

MODULE – V: THE IEEE802.15 WORKING GROUP FOR WPANS (9)

The IEEE 802.15.3, The IEEE 802.15.4, ZigBee Technology, ZigBee components and network topologies, The IEEE 802.15.4 LR-WPAN Device architecture: Physical Layer, Data Link Layer, The Network Layer, Applications; IEEE 802.15.3a Ultra-wideband.

V. TEXT BOOKS:

1 Carlos de Morais Cordeiro and Dharma Prakash Agrawal, "AdHoc and Sensor Networks", World Scientific, 2011.
2 VijayK.Garg, "Wireless Communications and Networking", Morgan Kaufmann Publishers, 2009.

VI. REFERENCE BOOKS:

1 Kaveh Pahlaram, Prashant Krishnamurthy, "Wireless Networks", PHI, 2002.
2 Marks Ciampor, Jeorge Olenewa, "Wireless Communication", Cengage Learning, 2007.

VII. WEB REFERENCES:

1. www.edufind.com

VIII. E-TEXT BOOKS:

1. https://books.google.co.in/books/about/Emerging_Wireless_LANs_Wireless_PANs_and.html?id=JqgYH9i67sC&redir_esc=y