

CELLULAR AND MOBILE COMMUNICATION

VI Semester: ECE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AECB39	ELECTIVE	L	T	P	C	CIA	SEE	Total
		3	-	-	3	30	70	100
Contact Classes: 45		Tutorial Classes: -		Practical Classes: Nil			Total Classes: 45	
<p>OBJECTIVES: The course should enable the students to:</p> <p>I. The basic knowledge of cellular mobile system, frequency channels and the design of antenna II. The expedition of wireless systems applications for the various generations of wireless networks III. The advanced intelligent network for wireless communications and future public land mobile</p> <p>COURSE OUTCOMES: At the end of the course the students should be able to:</p> <p>CO 1 Understand the cellular mobile system design concepts to improve the Signal to noise ratio and cell coverage. CO 2 Utilize the omni directional and directional antennas to improve the channel capacity and interference reduction. CO 3 Interpret the Co-channel and nonco-channel interferences and their parameters to improve the system capacity. CO 4 Illustrate the importance of Handoff for preventing loss of interruption of services to a caller. CO 5 Make use of the Numbering and grouping, setup access and paging channels for low traffic inthe mobile and land originating calls. CO 6 Interpret the channel sharing and borrowing, sectorization and cell splitting to reduce the call dropping or blocking rates in a mobile cellula rnetwork. CO 7 Extend the concepts of channel assignment, dropped call rate to improve cell coverage for better network services. CO 8 Identify the design challenges of wireless communication network for reliable high speed communication. CO 9 Demonstrate the Interim Standard, Digital Enhanced Cordless System, multiple access scheme of the wireless networks and standards. CO 10 Infer the Intelligent cell concept and advanced intelligent network for advanced land mobile telecommunication system.</p>								
MODULE-I		CELLULAR MOBILE RADIO SYSTEMS					Classes: 10	
Introduction to cellular mobile System, performance criteria, uniqueness of mobile radio environment, operation of cellular systems, hexagonal shaped cells, analog and digital Cellular systems, General description of the problem, concept of frequency channels, Co-channel Interference Reduction Factor, desired C/I from a normal case in a omni directional Antenna system, Cell splitting, consideration of the components of Cellular system.								

MODULE -II	INTERFERENCE AND CELL COVERAGE FOR SIGNAL AND TRAFFIC	Classes: 09
Introduction to Co-Channel Interference, real time Co-Channel interference, Co-Channel measurement, design of Antenna system, Antenna parameters and their effects, diversity receiver, non-co channel interference-different types, Signal reflections in flat and hilly terrain, effect of human made structures, phase difference between direct and reflected paths, constant standard deviation, straight line path loss slope, general formula for mobile propagation over water and flat open area, near and long distance propagation antenna height gain, form of a point to point model.		
MODULE -III	CELL SITE AND MOBILE ANTENNAS	Classes: 10
Sum and difference patterns and their synthesis, omni directional antennas, directional antennas for interference reduction, space diversity antennas, umbrella pattern antennas, minimum separation of cell site antennas, high gain antennas, Numbering and grouping, setup access and paging channels channel assignments to cell sites and mobile units, channel sharing and borrowing, sectorization, overlaid cells, non fixed channel assignment, Handoff, dropped calls and cell splitting, types of handoff, handoff invitation, delaying handoff, forced handoff, mobile assigned handoff. Intersystem handoff, cell splitting, micro cells, vehicle locating methods, dropped call rates and their evaluation.		
MODULE -IV	WIRELESS SYSTEMS AND STANDARDS	Classes: 08
Second generation and Third generation Wireless Networks and Standards, WLL, Bluetooth, GSM, IS95, DECT, GSM architecture, GSM channels, multiplex access scheme, TDMA, CDM.		
MODULE-V	INTELLIGENT NETWORK FOR WIRELESS COMMUNICATIONS	Classes: 08
Intelligent cell concept, advanced intelligent network, SS7 network and ISDN for AIN, AIN for mobile communication, asynchronous transfer mode technology, future public land mobile telecommunication system, wireless information superhighway.		
Text Books:		
<ol style="list-style-type: none"> 1. Theodore .S. Rapport, —Wireless Communications, Pearson Education, 2nd Edition, 2010. 2. Upen Dalal, “Wireless communication”, oxford University press, 2010. 3. Kaveh Pahlvan, Prashant Krishnamurthy, “Principle of wireless networks”, A United Approach, Pearson Education, 2004. 4. Andrea Goldsmith, “Wireless Communications”, Cambridge University Press, 2005 		
Reference Books:		
<ol style="list-style-type: none"> 1. Theodore. S. Rapport, "Wireless Communications", 3rd Edition, Pearson Education, 2003. 2. Lee, "Wireless and Mobile Communications", McGraw Hill, 3rd Edition, 2006. 3. Jon W. Mark and Weihua Zhqung, "Wireless Communication and Networking", PHI, 1st Edition, 2005. 4. R. Blake, "Wireless Communication Technology", Thompson Asia Pvt. Ltd., 1st Edition 2004. 		
Web References:		
<ol style="list-style-type: none"> 1. https://accessengineeringlibrary.com 2. http://www.radio-electronics.com 3. https://www.jntubook.com 4. http://www.iare.ac.in 		
E-Text Books:		
<ol style="list-style-type: none"> 1. http://www.iitg.ernet.in/scifac/qip/public_html/cd_cell/EC632.pdf 2. https://books.google.co.in/books/about/Cellular_and_Mobile_Communications 3. https://technicalpublications.org/.../books/Cellular and Mobile Communications. 		