

## COLLEGE OF ENGINEERING & TECHNOLOGY

Accredited by National Board of Accreditation.

AlCTE, New Delhi, Accredited by NAAC with "A" Grade — 3.32 CGPA.

Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi,
Permanent Affiliation to JNTUK, Kakinada

Petmanent Affiliation to JNTUK, Kakinada

SEETHARAMPURAM, W.G.DT., NAR SAPUR-534280, (Andhra Pradesh)

## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

#### TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Period /Week	Academic Year	Semester commencement date
16EC7E02	Cellular & Mobile Communications (R-16)	VII	ECE	5	2021-22	04-10-2021
COURSE OU A	fter completion of the course Design Hexagonal shaped	student are abl	e to w these are in	nplemented in	real world.(K1	,K2,K4)
2	Explain different types of	antenna syste	ems in mobile	communication	on.(K1,K2,K3)	1.4.
3	Analyze Handoffs and evaluation.(K2,K3,K4)					
. 4	Describe applications of CDMA. (K1,K2,K4)	GSM Archite	ecture and GS	SM channels, r	nultiple access	s scheme, TDMA

Unit No	Out Come/Bloom's Level		Topics/Activity	Reference Text book	Contact Periods	Delivery Method
			CELLULAR & MOBILE COMMUNICATIONS			
		1.1	<b>Evolution</b> of Mobile Communications	T1,T2,R1	1	
(	CO1: Design Hexagonal shaped cells and how these	1.2	Mobile Radio Systems around the world	T1,T2,R1	1	
		1.3	First, Second, Third Generation Wireless Networks	T1,T2,R1	1	
<b>-1</b>		1.4	Wireless Local Loop(WLL)	T1,T2,R1	1	
	are implemented in real	1.5	Wireless LANs	T1,T2,R1	1	Chalk &
	world.(K1,K2,K4)	1.6	Bluetooth	T1,T2,R1	1	Talk, PPT
		1.7	Personal Area Networks(PANs)	T1,T2,R1	1	& Tutorial.
		1.8	Examples of Wireless Communication Systems	T1,T2,R1	1	
		1.9	A Simplified Reference Model	T1,T2,R1	1	
		1.10	Applications	T1,T2,R1	1	
			Problems	T1,T2,R1	1	
				TOTAL	10	



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CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO3: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO3: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO3: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO3: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO3: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO3: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   CO3: Explain different types of antenna systems in types of antenn							
CO1: Design Hexagonal shaped cells and how these are implemented in real world.(K1,K2,K3)							
CO1: Design Hexagonal shaped cells and how these are implemented in real world.(K1,K2,K3)	•		2.1	General description of the problem	T1,R1,R2	1	
Shaped cells and how these are implemented in real world.(K1,K2,K3)			2.2		T1,R1,R2	1	
Shaped cells and how these are implemented in real world.(K1,K2,K3)	CO	1: Design Hexagonal	2.3		T1,R1,R2	1	
Are implemented in real world.(K1,K2,K3)	sho	aped cells and how these		Factor			Chalk &
Norld.(K1,K2,K3)   2.5   Desired C/I from a normal case in a Omni directional Antenna system   2.6   Problems   T1,R1,R2   1   2.7   Cell splitting   T1,R1,R2   1   1   2.8   Consideration of the components of Cellular system   2.9   Problems   T1,R1,R2   1   TOTAL   9   THE CELLULAR CONCEPT   3.1   Introduction, Frequency reuse, Handoff strategies   3.2   Interference and System Capacity: Co-Channel Interference   3.3   Channel Planning   T1,R1,R4   1   3.4   Adjacent Channel Interference   T1,R1,R4   1   3.5   Power control for reducing interference   3.6   Trunking and Grade of Service   T1,R1,R4   1   3.7   Cell Splitting   T1,R1,R4   1   3.8   Sectoring   T1,R1,R4   1   3.10   A microcell zone concept   T1,R1,R4   1   3.11   Problems   T1,R1,R4   1   3.12   CELL SIZE ANTENNAS AND MOBILE ANTENNAS: Characteristics   3.13   Antennas at Cell site   T1,R1,R4   1   1   1   1   1   1   1   1   1			2.4	Problems	T1,R1,R2	1	Talk, PPT
Omni directional Antenna system			2.5	Desired C/I from a normal case in a	T1,R1,R2	1	& Tutorial
2.6   Problems							
2.7   Cell splitting			2.6	•	T1,R1,R2	1	-
Collidar system   2.9   Problems   T1,R1,R2   1			2.7	Cell splitting		1	-
Cellular system   2.9   Problems			2.8				-
2.9   Problems	_						
TOTAL 9  THE CELLULAR CONCEPT  3.1 Introduction, Frequency reuse, Handoff strategies  3.2 Interference and System Capacity: Co- Channel Interference  3.3 Channel Planning T1,R1,R4 1  3.5 Power control for reducing interference  3.6 Trunking and Grade of Service T1,R1,R4 1  3.7 Cell Splitting T1,R1,R4 1  3.8 Sectoring T1,R1,R4 1  3.9 Repeaters for Range extension T1,R1,R4 1  3.10 A microcell zone concept T1,R1,R4 1  3.11 Problems T1,R1,R4 1  3.12 CELL SIZE ANTENNAS AND MOBILE ANTENNAS: Characteristics  3.13 Antennas at Cell site T1,R1,R4 1  3.14 Mobile Antennas T1,R1,R4 1			2.9		T1.R1.R2	1	-
THE CELLULAR CONCEPT   3.1   Introduction, Frequency reuse, Handoff strategies   3.2   Interference and System Capacity: Co- Channel Interference   3.3   Channel Planning   T1,R1,R4   1   1   3.4   Adjacent Channel Interference   T1,R1,R4   1   3.5   Power control for reducing interference   T1,R1,R4   1   3.7   Cell Splitting   T1,R1,R4   1   3.8   Sectoring   T1,R1,R4   1   3.8   Sectoring   T1,R1,R4   1   3.9   Repeaters for Range extension   T1,R1,R4   1   3.10   A microcell zone concept   T1,R1,R4   1   3.11   Problems   T1,R1,R4   1   3.12   CELL SIZE ANTENNAS AND   T1,R1,R4   1   MOBILE ANTENNAS: Characteristics   3.13   Antennas at Cell site   T1,R1,R4   1   1   1   1   1   1   1   1   1							-
Handoff strategies  3.2 Interference and System Capacity: Co- Channel Interference  3.3 Channel Planning T1,R1,R4 T1 T1 T1,R1,R4 T1							
3.2 Interference and System Capacity: Co-Channel Interference  3.3 Channel Planning  3.4 Adjacent Channel Interference  3.5 Power control for reducing interference  3.6 Trunking and Grade of Service  3.7 Cell Splitting  3.8 Sectoring  3.9 Repeaters for Range extension  3.10 A microcell zone concept  3.11 Problems  3.12 CELL SIZE ANTENNAS AND MOBILE ANTENNAS: Characteristics  3.13 Antennas at Cell site  3.14 Mobile Antennas  T1,R1,R4 1			3.1	Introduction, Frequency reuse,	T1,R1,R4	1	
CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)  CO3: Explain different types of antenna systems in Mobile Antennas  CO4: Explain different types of antenna systems in Mobile Communication. (K2,K3,K4)  CO5: Explain different types of antenna systems in Mobile Communication. (K2,K3,K4)  CO6: Explain different types of antenna systems in Mobile Communication. (K2,K3,K4)  CO7: Explain different types of antenna systems in Mobile Communication. (K2,K3,K4)  CO8: Explain different types of antenna systems in Mobile Communication. (K2,K3,K4)  CO9: Explain different types of antenna systems in T1,R1,R4				Handoff strategies			
3.3   Channel Planning   T1,R1,R4   1			3.2	Interference and System Capacity:	T1,R1,R4	1	
3.4 Adjacent Channel Interference  3.5 Power control for reducing interference  3.6 Trunking and Grade of Service  3.7 Cell Splitting  3.8 Sectoring  3.9 Repeaters for Range extension  3.10 A microcell zone concept  3.11 Problems  3.12 CELL SIZE ANTENNAS AND MOBILE ANTENNAS AND MOBILE ANTENNAS:  Characteristics  3.13 Antennas at Cell site  3.4 Adjacent Channel Interference  T1,R1,R4 1				Co- Channel Interference			
3.5 Power control for reducing interference  3.6 Trunking and Grade of Service  3.7 Cell Splitting  3.8 Sectoring  3.9 Repeaters for Range extension  3.10 A microcell zone concept  3.11 Problems  3.12 CELL SIZE ANTENNAS AND MOBILE ANTENNAS:  Characteristics  3.13 Antennas at Cell site  3.6 Trunking and Grade of Service  T1,R1,R4 1  3.7 Cell Splitting  T1,R1,R4 1			3.3	Channel Planning	T1,R1,R4	1	
CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)  3.6 Trunking and Grade of Service  3.7 Cell Splitting  3.8 Sectoring  3.9 Repeaters for Range extension  3.10 A microcell zone concept  3.11 Problems  3.12 CELL SIZE ANTENNAS AND  MOBILE ANTENNAS:  Characteristics  3.13 Antennas at Cell site  3.14 Mobile Antennas  T1,R1,R4 1			3.4	Adjacent Channel Interference	T1,R1,R4	1	1
interference  3.6 Trunking and Grade of Service  T1,R1,R4 1  3.7 Cell Splitting T1,R1,R4 1  3.8 Sectoring T1,R1,R4 1  3.9 Repeaters for Range extension T1,R1,R4 1  3.10 A microcell zone concept T1,R1,R4 1  3.11 Problems T1,R1,R4 1  3.12 CELL SIZE ANTENNAS AND MOBILE ANTENNAS: Characteristics  3.13 Antennas at Cell site T1,R1,R4 1  3.14 Mobile Antennas T1,R1,R4 1		types of antenna systems in mobile communication.	3.5	Power control for reducing	T1,R1,R4	1	Chalk & Talk, PPT
CO2: Explain different types of antenna systems in mobile communication. (K2,K3,K4)   3.8   Sectoring   T1,R1,R4   1	3			interference			&
types of antenna systems in mobile communication. (K2,K3,K4)  3.8 Sectoring  3.8 Sectoring  3.9 Repeaters for Range extension  3.10 A microcell zone concept  3.11 Problems  3.12 CELL SIZE ANTENNAS AND  MOBILE ANTENNAS:  Characteristics  3.13 Antennas at Cell site  3.14 Mobile Antennas  T1,R1,R4 1  T1,R1,R4 1  T1,R1,R4 1  T1,R1,R4 1  T1,R1,R4 1	CO		3.6	Trunking and Grade of Service	T1,R1,R4	1	Tutorial
3.8   Sectoring   T1,R1,R4   1	_		3.7	Cell Splitting	T1,R1,R4	1	
3.10   A microcell zone concept   T1,R1,R4   1			3.8	Sectoring	T1,R1,R4	1	
3.11   Problems   T1,R1,R4   1	(K2,		3.9	Repeaters for Range extension	T1,R1,R4	1	
3.12 CELL SIZE ANTENNAS AND MOBILE ANTENNAS: Characteristics  3.13 Antennas at Cell site T1,R1,R4 1  3.14 Mobile Antennas T1,R1,R4 1			3.10	A microcell zone concept	T1,R1,R4	1	
MOBILE ANTENNAS: Characteristics  3.13 Antennas at Cell site T1,R1,R4 1 3.14 Mobile Antennas T1,R1,R4 1	-		3.11	Problems	T1,R1,R4	1	
Characteristics  3.13 Antennas at Cell site T1,R1,R4 1  3.14 Mobile Antennas T1,R1,R4 1			3.12		T1,R1,R4	1	
3.13         Antennas at Cell site         T1,R1,R4         1           3.14         Mobile Antennas         T1,R1,R4         1							
3.14 Mobile Antennas T1,R1,R4 1			• • • •				
3 15 Problems TIDIDA 1						1	
1.32.32.			3.15	Problems	T1,R1,R4	1	
TOTAL 15				T	OTAL	15	



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		T	MOBILE RADIO PROPAGATION		T	
CO2. A. 1		4.1	Introduction, Free space propagation model	T1,T2,R1	1	
	4.2	The three basic propagation models- Reflection	T1,T2,R1	1		
	CO3: Analyze Handoffs and different types of		Diffraction and Scattering	T1,T2,R1	1	
4	handoffs and Dropped call	4.4	Two-ray model	T1,T2,R1	1	Chalk &
	rates and their	4.5	Outdoor propagation models	T1,T2,R1	1	Talk, PPT
	evaluation.(K1,K2,K4)	4.6	Indoor propagation models	T1,T2,R1	1	- & Tutorial
		4.7	Problems	T1,T2,R1	1	- Tutoriui
		4.8	Signal Penetration into building	T1,T2,R1	1	
		4.9	Small scale multipath Propagation	T1,T2,R1	1	
		4.10	Parameters of Mobile multipath channels	T1,T2,R1	1	
		4.11	Types of small scale fading	T1,T2,R1	1	
		4.12	Problems	T1,T2,R1	1	
				TOTAL	12	
4			FREQUENCY MANAGEMENT AND CHANNEL ASSIGNMENT			
		5.1	Numbering and grouping	T1,R1,R3	1	
_	CO3: Analyze Handoffs	5.2	Setup access	T1,R1,R3	1	-
5	and different types of	5.3	paging channels	T1,R1,R3	1	Chalk &
	handoffs and Dropped call	5.4	channel assignments to cell sites	T1,R1,R3	1	Talk, PPT
	rates and their evaluation.	5.5	channel assignments to mobile units	T1,R1,R3	1	& Tutorial
	(K2,K3,K4).	5.6	Channel sharing and borrowing	T1,R1,R3	1	
0		5.7	Sectorization	T1,R1,R3	1	
	5.8	Overlaid cells	T1,R1,R3	1		
		5.9	Non fixed channel assignment	T1,R1,R3	1	
			DICEMBER	TOTAL	9	
			DIGITAL CELLULAR NETWORKS			
	CO4: Describe applications of GSM Architecture and GSM channels, multiple access schemes, TDMA,	6.1	GSM architecture	T1,R1,R4	1	
- 6		6.2	GSM channels	T1,R1,R4	1	Chalk &
		6.3	Multiple access scheme	T1,R1,R4	1	Talk, PPT
	CDMA. (K1,K2,K4)	6.4	TDMA	T1,R1,R4	1	& Tutorial
		6.5	CDMA	T1,R1,R4	1	
		0.00 : -	V.	TOTAL	5	
	Te	OTAL	NO. OF CLASSES PROPOSED PER P	FDIODE	60	



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ext Book	<b>'</b>							
S.No.	AUTHORSTOOM	The state of the s	PURICATION					
1	AUTHORS/BOOK TITLE/EDITION(latest)/PUBLISHER/YEAR OF PUBLICATION  Gottapu Sasibhushana Rao, Mobile Cellular Communication, 1st Edition, Pearson International, 2012.							
<del>-2</del>	W.C.Y. Lee, Mobile Cellular Telecommunications, 2rd Edition, Tata McGraw Hill, 2006.							
eference	Books:							
S.No.		E/EDITION(latest)/PUBLISHER/YEAR OF	PUBLICATION					
1		less Communications,2 <sup>nd</sup> Edition, Principles and						
2		d Mobile Communications, 3rd Edition, Mc						
eb Deta	ails							
	www.nptel.ac.in							
2	www.slideshare.net							
3	https://youtu.be/Z-Hw3CpPVj0	)						
NO		Name	Signature with Date					
i.	Faculty	Mr. M.MURALI	MuraDyopy					
ii. ¯	Course Coordinator	Mr. M.MURALI	Mura Doly					
ii.	Module Coordinator	Dr. B.SADASIVA RAO	b. sacreti					
v.	Programme Coordinator	Dr.B.S.RAO	Burlind					

Principal