



SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, 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 Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods/ Week	Academic Year	Date of commencement of Semester
20EC7E20	ADVANCED COMMUNICATION SYSTEMS	VII	ECE	5	2025-2026	09-06-2025

COURSE OUTCOMES

After completion of the course students can able to

1	Categorize different generation wireless technologies (K4)
2	Demonstrate encoding and decoding the transmitted data (K3)
3	Outline the characteristics of MIMO channel (K4)
4	List Multiple access Schemes (K3)

UNIT	Out Comes / Bloom's Level	Topics	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
I	CO 1: Recognize different generation wireless technologies (K4)	UNIT-1: INTRODUCTION TO WIRELESS COMMUNICATION				
		1.1	Introduction to modern wireless communication system	T1, T2	1	Chalk & Talk, PPT & Case Study
		1.1	Introduction to modern wireless communication system	T1, T2	1	
		1.2	Second generation wireless networks,	T1, T2	1	
		1.3	third generation wireless networks	T1, T2	1	
		1.4	fourth generation wireless technologies	T1, T2, R1	1	
		1.5	Wireless in local loop	T1, T2, R1	1	
		1.5	Wireless in local loop	T1, T2, R1	1	
		1.6	Blue tooth	T1, T2	1	
		1.7	personal area networks	T1, T2	1	
		1.8	overview of WIMAX Technologies	T1, T2	2	
		1.9	Architecture spectrum allocation	T1, T2	1	
			Class Test		1	
		Total				13
II	CO2: Demonstrate encoding and decoding the transmitted data (K3)	UNIT – 2: CHANNEL CODING, TURBO CODES				
		2.1	Channel coding: Overview of code design	T1, T2	1	Chalk & Talk,
		2.1	Channel coding: Overview of code design	T1, T2	1	
		2.2	Linear block codes	T1, T2,	1	
		2.2	Linear block codes	T1, T2,	1	
		2.3	Cyclic Codes	T1, T2, R1, R2	1	
		2.4	Convolution codes.	T1, T2, R2	1	



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		2.5	Trellis diagram	T1,T1,R1	1	PPT Active Learning & Case Study
		2.5	Trellis diagram	T1,T1,R1	1	
		2.6	maximum likelihood decoding	T1,R1,R2	1	
		2.7	Viterbi Algorithm	T1,R1,R2	1	
		2.8	Concatenated codes	T1,R1,R2	1	
		2.9	Turbocodes –Low density parity check codes	T1,R1,R2	1	
		2.9	Turbocodes –Low density parity check codes	T1,R1,R2	1	
			Class Test		1	
Total					14	
III	CO3: Outline the characteristics of MIMO channel (K4)	UNIT – 3: MIMO				
		3.1	Multiple Antenna Communication: Narrowband MIMO Model	T2.R1	1	Chalk & Talk, PPT Tutorial
		3.1	Multiple Antenna Communication: Narrowband MIMO Model	T2.R1	1	
		3.2	Parallel decomposition of MIMO	T2.R1	1	
		3.3	MIMO channel capacity	T2.R1	1	
		3.3	MIMO channel capacity	T2.R1	1	
		3.4	static and fading channel	T2.R1	1	
		3.4	static and fading channel	T1, R2	1	
		3.5	MIMO diversity gain	T1, R2	1	
		3.5	MIMO diversity gain	T1, R2	1	
		3.6	Diversity/Multiplexing trade-offs	T1, R2	1	
		3.7	Space time modulation and coding-Frequency selective MIMO channels	T1, R2	1	
		3.7	Space time modulation and coding-Frequency selective MIMO channels	T1, R2	1	
			Class Test		1	
Total					13	
IV	CO2: Demonstrate encoding and decoding the transmitted data (K3).	UNIT – 4: EQUALIZATION ANDMULTI CARRIER MODULATION				
		4.1	Equalizer noise enhancement,	T1, T2	1	Chalk & Talk, PPT Tutorial
		4.1	Equalizer noise enhancement,	T1, T2	1	
		4.2	equalizer types	T2.R1	1	
		4.2	equalizer types	T2.R1	1	
		4.3	folded spectrum ISI-free transmission,	T2,R2	1	
		4.3	folded spectrum ISI-free transmission,	T2,R2	1	
		4.4	linear equalizer		1	
		4.5	Multicarrier modulation: Data transmission using multiple carriers	T2.R1,R2	1	



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		4.5	Multicarrier modulation: Data transmission using multiple carriers	T2,R1,R2	1	
		4.6	Multi carrier modulation with overlapping sub-channels.	T1, T2,R1	1	
		4.6	Multi carrier modulation with overlapping sub-channels.	T1, T2,R1	1	
			Class Test		1	
Total					12	
UNIT – 5 :MULTIPLE ACCESS SCHEMES:						
V	CO4: List the Multiple Explain Multiple access Schemes (K3)	5.1	Introduction to multiple access: Frequency Division Multiple Access (FDMA)	T1, R2	1	Chalk & Talk, PPT Tutorial
		5.1	Introduction to multiple access: Frequency Division Multiple Access (FDMA)	T1, R2	1	
		5.2	Time Division Multiple Access	T1, R2	1	
		5.2	Time Division Multiple Access	T1, R2	1	
		5.3	OFDM Spread Spectrum Multiple Access	T1, R2	1	
		5.3	OFDM Spread Spectrum Multiple Access	T1, R2	1	
		5.4	Space Division Multiple Access	T1, T2	1	
		5.4	Space Division Multiple Access	T1, T2	1	
		5.6	Overview of GSM, GPRS, EDGE, UMTS,CDMA 2000	T1, T2	1	
		5.6	Overview of GSM, GPRS, EDGE, UMTS,CDMA 2000	T1, T2	1	
Content beyond Syllabus (if needed)		5.7	HSDPA and LTE	T2,R2	1	
Total					11	
CUMULATIVE PROPOSED PERIODS					63	
Text Books:						
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION					
1.	Robert.W. HEATHJR.” Foundations of MIMO Communications”,1st edition, Cambridge University press,2018.					
2.	Simon Haykin, Michal Mohar,” Modern wireless communications”1st edition, Pearson education,2011.					



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Reference Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1.	Brijesh Verma, "Advanced Communication Systems", 2nd edition, S.K. Kataria & sons, 2022.
2.	Iti Saha Mishra, "wireless communications and networks", 2nd edition, McGrawHill, 2015).

Web Details

1.	www.nptel.com
2.	www.thelearningpoint.net

	Name	Signature with Date
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