

COMMUNICATION SYSTEMS

Course Code	20EC5701	Year	IV	Semester	I
Course Category	MINOR	Branch	ECE	Course Type	Theory
Credits	4	L-T-P	3-1-0	Prerequisites	Nil
Continuous Internal Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	Understand Analog and Digital modulation and demodulation techniques. (L2)
CO2	Analyse Analog to Digital conversion techniques (L4)
CO3	Analyse Analog and Digital modulation Systems (L4)
CO4	Develop a GSM Cellular system for Mobile communications. (L3).

Mapping of course outcomes with Program outcomes (CO/ PO/PSO Matrix)														
Note: 1- Weak correlation 2-Medium correlation 3-Strong correlation														
* - Average value indicates course correlation strength with mapped PO														
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO1	2									2		2		
CO2		3								3				
CO3		3								3				
CO4	2									2				2
Average * (Rounded to nearest integer)	2	3								3		2		2

Syllabus		
Unit No.	Contents	Mapped CO
I	Block diagram of communication system, Need for modulation. Amplitude Modulation: Time domain and frequency domain description of AM, single tone modulation, Generation of AM waves: square law Modulator, Switching modulator. Demodulation of AM waves: Square law detector, Envelope detector. DSBSC, SSBSC and VSBSC Modulations.	CO1,CO3
II	Angle Modulation: Basic concepts of Phase and Frequency Modulation, Single tone frequency modulation, Narrow band FM, Wide band FM. Generation of FM waves: Indirect FM, Direct FM. Foster-Seeley Discriminator, Zero crossing detectors.	CO1,CO3
III	Pulse Modulation: Generation & Demodulation of Pulse Amplitude Modulation, Pulse Width Modulation and Pulse	CO1,CO2

	Position Modulations. Waveform Coding Techniques: Introduction, Pulse code modulation (PCM), Delta modulation, Adaptive delta modulation, Differential Pulse Code Modulation (DPCM).	
IV	Digital Modulation Techniques: Coherent Phase Shift Keying, Coherent Frequency Shift Keying, Quadrature Phase Shift Keying, Non Coherent Frequency Shift Keying, Differential Phase Shift keying. Multiplexing: Time Division Multiplexing and Frequency Division Multiplexing.	CO1, CO3
V	Cellular & Mobile Systems: Introduction to Cellular Mobile System, operation of cellular systems, Hexagonal shaped cells. Global System for Mobile (GSM): GSM Services and features, GSM System architecture, GSM radio subsystem, GSM Channel types, GSM Traffic channels, GSM Control channels, Examples of GSM call, Frame structure for GSM.	CO1,CO4

Learning Resources	
Text Books	
1. S. Haykin- Introduction to Analog and Digital Communication System, John Wiley and Sons, 3 rd Ed., 2009.	
2. W.C.Y. Lee – Mobile Cellular Telecommunications, Tata McGraw Hill, 2 nd Ed., 1995.	
Reference Books	
1. Sam Shanmugam - Digital and Analog Communication Systems, John Wiley, 1979.	
2. A B Carlson– Communication systems, McGraw-Hill, 4 th Ed., 2002	
3. H.Taub , D. Schilling – Principles of Communication Systems, TMH, 3 rd Ed., 2008	
4. Kamilo Feher- Wireless Digital Communications, PHI, 2003.	
e- Resources & other digital material	
1. http://www.ece.utah.edu/~npatwari/ece5520/lectureAll.pdf	
2. http://nptel.iitm.ac.in/syllabus/syllabus.php?subjectId=117105077	
3. http://nptel.iitm.ac.in/syllabus/117103016/	
4. http://nptel.iitm.ac.in/video.php?courseId=1036	
