

ANALOG AND DIGITAL COMMUNICATIONS LABORATORY

IV Semester: ECE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AECC14	Core	L	T	P	C	CIA	SEE	Total
		0	0	3	1.5	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 36			Total Classes:36			
Prerequisite: There are no prerequisites to take this course.								
I. COURSE OVERVIEW:								
Communication engineering is the field of study concerned with the transmission of information either in analog or digital form. The objective of this course provides a platform to the students to understand the basics of analog and digital communication systems, modulation techniques, data transmission, multiplexing, etc								
II. COURSE OBJECTIVES:								
The students will try to learn:								
I. The basic theory of communication system in practice.								
II. The concept of analog to digital conversion for pulse modulation techniques.								
III. The analog and digital modulation techniques using MATLAB tool.								
I. COURSE SYLLABUS:								
Week – 1: LTI SYSTEM AND ITS RESPONSE								
a) Verification of linearity, time invariance, stability properties of a given system								
b) Computation of impulse, step, sinusoidal response of a given linear time invariant system using MATLAB								
Week – 2: AMPLITUDE MODULATION AND DEMODULATION								
Generation of amplitude modulation and demodulation using hardware and MATLAB								
Week – 3: DSB-SC MODULATOR AND DETECTOR								
Generation of AM-Double Side Band Suppressed Carrier (DSB-SC) signal using Balanced Modulator.								
Week – 4: SSB-SC MODULATOR AND DETECTOR (PHASE SHIFT METHOD)								
Generation of single side band suppressed carrier modulation and demodulation using hardware and MATLAB								
Week – 5: FREQUENCY MODULATION AND DEMODULATION								
Generation of frequency modulation and demodulation using hardware and MATLAB								
Week – 6: PRE-EMPHASIS AND DE-EMPHASIS								
Verification of pre-emphasis and de-emphasis to boost high frequency modulating signal using hardware and MATLAB								
Week – 7: SAMPLING THEOREM – VERIFICATION								
Verification of sampling theorem for under, perfect, over sampling cases								
Week – 8: PULSE AMPLITUDE MODULATION AND DEMODULATION								
Generation of Pulse Amplitude modulation and demodulation using hardware and matlab								
Week – 9: PULSE WIDTH MODULATION AND DEMODULATION								
Generation of Pulse width modulation and demodulation using hardware and matlab.								
Week – 10: PULSE POSITION MODULATION AND DEMODULATION								
Generation of pulse position modulation and demodulation using hardware and matlab								

Week – 11: PULSE CODE MODULATION

Generation of pulse code modulation and demodulation using hardware and understanding the concept analog to digital conversion

Week – 12: DIFFERENTIAL PULSE CODE MODULATION

Generation of differential pulse code modulation and demodulation using hardware

Week – 14: FREQUENCY SHIFT KEYING.

Generation of Frequency shift keying modulation and demodulation using hardware

Week – 13: DIFFERENTIAL PHASE SHIFT KEYING

Generation of Differential Phase shift keying modulation and demodulation using hardware

IV. REFERENCE BOOKS:

1. Devdas Shetty, Richard A. Kolk, “Mechatronics System Design”, PWS Publishing Company, 2011.
2. Dan Neacsulescu,, “Mechatronics”, Pearson Education, 3rd Edition, 2002..
3. Michael B. Hstand and David G. Alciatore, “Introduction to Mechatronics and Measurement systems”, McGraw-Hill, 2005.
4. B.P. Singh, “Advanced Microprocessor and Microcontrollers”, New Age International Publisher, 2002.

V. WEB REFERENCES:

1. <https://ocw.mit.edu/courses/electrical.../6...analog-communications.../lecture-notes>
2. <https://everythingvtu.wordpress.com>
3. <http://www.iare.ac.in>