Analog & Digital IC Applications Lab

Course Code	23EC3551	**Year**	III	**Semester**	I
Course Category	PC	**Branch**	ECE	**Course Type**	Lab
Credits	1.5	**L-T-P**	0-0-3	**Prerequisites**	EDC, STLD
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		BL
CO1	**Analyze** op-amp related circuits to design various applications of op-amp.	L4
CO2	**Analyze** timer circuits using IC 555 Timer.	L4
CO3	**Apply** the concepts of data conversion techniques to design DAC/ADC	L3
CO4	**Apply** the knowledge of different digital ICs to verify their functionality.	L3

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of Correlations (3:High, 2:Medium, 1:Low)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2			3			2	2		1	3	
CO2	3	2			3			2	2		1	2	
CO3	3				3			2	2		1	2	
CO4	3				3			2	2		1	2	
Average	3				3			2	2		1	2	

Note: All the below experiments are to be executed/completed using either hardware components/boards or related software tools.

Syllabus		
Expt. No.	**Contents**	**Mapped CO**
PART-A (Minimum **five** Experiments to be conducted)		
1	OP AMP Applications – Adder, Subtractor, Comparator Circuits.	CO1
2	Integrator and Differentiator Circuits using IC 741.	CO1
3	Active Filter Applications – LPF, HPF (first order)	CO1
4	Active Filter Applications – BPF, Band Reject (Wideband) and Notch Filters.	CO1
5	IC 741 Oscillator Circuit –Wien Bridge Oscillator	CO1
6	Function Generator using OP AMP	CO1
7	IC 555 Timer – Astable & Mono-stable Operation Circuit.	CO2
8	Schmitt Trigger Circuits using IC 741 and IC 555.	CO2
9	4 bit DAC using OP-AMP.	CO3
PART-B(Minimum **five** Experiments to be conducted)		
1	Realization of Logic Gates	CO4
2	3 to 8 Decoder- IC 74138	CO4
3	Multiplexer- IC 74151	CO4
4	De-multiplexer- IC 74155	CO4

5	4-Bit Comparator- IC 7485.	CO4
6	D Flip-Flop- IC 7474	CO4
7	Decade Counter- IC 7490	CO4
8	Universal shift register- IC 74194/195	CO4

Learning Resources
Text Books
1. Ramakanth A. Gayakwad, Op-Amps & Linear ICs, 4th Ed., PHI, 2010. 2. Floyd and Jain, Digital Fundamentals, 8th Ed., Pearson, 2005.
Reference Books
1. D. Roy Choudhury, Linear Integrated Circuits, New Age International, 2nd Ed., 2003. 2. John. F. Wakerly, Digital Design Principles and Practices, 3rd Ed., Pearson, 2009.
e- Resources & other digital material
1. https://www.youtube.com/watch?v=lpXNCwsnxjM&list=PLuv3GM6-gsE3npYPJJDnEF3pdiHZT6Kj3 2. https://www.youtube.com/watch?v=g6CCJAbdkK8&list=PLHO2NKv71TvsSqYwVvUCZwNkY-jUyUHdS