



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad – 500043

Electronics and Communication Engineering

List of Laboratory Experiments

IC APPLICATIONS LABORATORY								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P		C	CIA	SEE
AECC15	Core	0	0	2	1	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 36			Total Classes:36			
Branch: ECE	Semester: IV	Academic Year: 2022-23			Regulation: UG20			
<p>Course overview: IC applications lab enables to learn design, testing and describing of circuit performance with digital and analog integrated circuits. It focuses on applications of special ICs and apply the techniques for the design of 741 ICs, applications of 555 timers, data converters and digital IC's for combination and sequential circuits design. This course provides practical hands-on experiments to analyze characteristics of commercially available digital integrated circuits.</p> <p>Course objectives: The students will try to perform:</p> <ol style="list-style-type: none"> I. The experiments on design of Linear and Digital Integrated circuits using operational amplifier and digital ICs. II. The design and implementation of analog circuits and gain the hands-on experience on the various building blocks of digital circuits. III. The IC based real-time applications in the fields of communication systems and home-based automation systems. <p>Course outcomes: After successful completion of the course, students should be able to:</p> <p>CO1: Design linear Integrated circuits to perform mathematical operations and voltage gain calculations using IC741.</p> <p>CO2: Plot the frequency response of second order active filters using IC 741</p> <p>CO3: Determine the frequency of oscillations of multi-vibrators using IC741 and IC555 timer.</p> <p>CO4: Obtain the capture range and lock-in range of phase locked loop circuit using IC565.</p> <p>CO5: Construct the low and high voltage regulators to find the percentage of regulation using IC723.</p> <p>CO6: Implement combinational and sequential circuits using digital ICs to verify their functionality.</p>								
WEEK NO	EXPERIMENT NAME							CO
WEEK – I	INVERTING, NON-INVERTING AND DIFFERENTIAL AMPLIFIERS							CO1
	To construct and test the performance of an Inverting, Non-inverting amplifier and Differential amplifier using IC741.							
WEEK – II	INTEGRATOR AND DIFFERENTIATOR							CO1
	To construct and test the performance of an Integrator and Differentiator using IC 741.							
WEEK – III	SECOND ORDER ACTIVE LOWPASS, HIGHPASS AND BANDPASS FILTERS							CO2
	To design and verify the operation of the Active low pass and High pass using IC 741.							
WEEK – IV	SECOND ORDER ACTIVE BAND PASS AND BANDREJECT FILTERS							CO2
	To design and verify the operation of the Band pass and Band reject filters using IC 741.							
WEEK – V	ASTABLE MULTIVIBRATORS USING 555							CO3
	To design and construct an astable multivibrators using IC 555.							

WEEK – VI	MONOSTABLE MULTIVIBRATORS 555	CO3
	To design and construct monostable multivibrators using IC 555.	
WEEK – VII	SCHMITT TRIGGER USING 555	CO3
	To design and construct Schmitt trigger using NE555 Timer.	
WEEK –VIII	PLL USING IC 565	CO4
	Verifying characteristics of PLL.	
WEEK - IX	INSTRUMENTATION AMPLIFIER	CO4
	To design and verify the operation of instrumentation amplifier using IC 741.	
WEEK - X	DIGITAL TO ANALOG CONVERTER	CO5
	To design and verify the operation of R-2R and Inverted R-2R DAC Converter using IC 741.	
WEEK - XI	IC 723	CO5
	To design and implement voltage regulator using IC 723.	
WEEK - XII	RTL LOGIC	CO6
	Verify Functionality of NOR and NAND gate using RTL Logic.	
WEEK - XIII	DTL LOGIC	CO6
	Verify Functionality of NOR and NAND gate using DTL Logic.	
WEEK - XIV	INTERFACE RELAY	CO6
	Program to interface Relay with P89V51RD2 using transistor	
WEEK - XV	INTERRUPT	CO6
	Program to toggle LEDS using simple INTERRUPT	