IC APPLICATIONS LABORATORY

IV Semester: ECE

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
AECC15	Core	0	0	2	1	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 26				Total Classes:26		

Prerequisite: There are no prerequisites to take this course.

I. COURSE OVERVIEW:

This course imparts hands-on knowledge for integrated circuit applications. It enables the students to design linear and non-linear applications using op-amp and pulse generation circuits using timer IC. Provide the capability to use vivado tool for performing the combinational and sequential circuits.

II. COURSE OBJECTIVES:

The students will try to learn:

  I.   Implement different circuits and verify circuit concepts.
  II. Study the concepts of multi vibrators and filters.
  III. Verify the operations of the 555 timers and PLLs and their applications.
  IV. Design and verify combinational and sequential circuits.

III. COURSE SYLLABUS:

Week – 1: INVERTING, NON-INVERTING AND DIFFERENTIAL AMPLIFIERS
To construct and test the performance of an Inverting, Non-inverting amplifier and Differential amplifier using IC741.

Week – 2: INTEGRATOR AND DIFFERENTIATOR
To construct and test the performance of an Integrator and Differentiator using IC 741.

Week – 3: SECOND ORDER ACTIVE LOWPASS, HIGHPASS AND BANDPASS FILTERS
To design and verify the operation of the Active low pass and High pass using IC 741.

Week – 4: SECOND ORDER ACTIVE BAND PASS AND BANDREJECT FILTERS
To design and verify the operation of the Band pass and Band reject filters using IC 741.

Week – 5: ASTABLE MULTIVIBRATORS USING 555
To design and construct an astable multivibrators using IC 555.

Week – 6: MONOSTABLE MULTIVIBRATORS 555
To design and construct Monostable multivibrators using IC 555.

Week – 7: SCHMITT TRIGGER USING 555
To design and construct schmitt trigger using NE555 Timer.

Week – 8: PLL USING IC 565
Verifying characteristics of PLL.

Week – 9: INSTRUMENTATION AMPLIFIER
To design and verify the operation of instrumentation amplifier using IC 741.

Week – 10: DIGITAL TO ANALOG CONVERTER
To design and verify the operation of R-2R and Inverted R-2R DAC Converter using IC 741.

Week – 11: IC 723
To design and implement voltage regulator using IC 723.

Week – 12: RTL LOGIC
Verify Functionality of NOR and NAND gate using RTL Logic.

Week – 13: DTL LOGIC
Verify Functionality of NOR and NAND gate using DTL Logic..

IV. REFERENCE BOOKS:
1. D. Roy Chowdhury, "Linear Integrated Circuits", New age international (p) Ltd, 2nd Edition,2003
2. Ramakanth A. Gayakwad, "Op-Amps & linear ICs", PHI, 3rdEdition,2003.
3. John F. Wakerly, "Digital Design Principles and Practices", Prentice Hall, 3rdEdition,2005.

V. WEB REFERENCES:
1. Salivahanan, "Linear Integrated Circuits and Applications", TMH, 1st Edition, 2008.