Course Number and Name
BEE403&Linear Integrated circuits

Credits and Contact Hours
3&45

Course Coordinator's Name
Dr.V.Jayalakshmi

Text Books and References

Text 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, 4th edition, 1987.

References:

1. R.F. Coughlin and Fredrick F. Driscoll, "Operational Amplifiers and Linear Integrated Circuits", PHI, 6th edition 1977.
2. David A. Bell, "Operational Amplifiers & Linear ICs", Oxford University Press, 2nd edition, 2010.
3. Design with Operational Amplifiers and Analog Integrated Circuits - Sergio Franco, McGraw Hill, 3rd edition, and 2002.
4.http://nptel.ac.in/video.php?subjectId=108106068

Course Description

Ability to understand and analyze linear and digital electronic circuits.

Prerequisites	Co-requisites
Digital Electronics	Nil

required, elective, or selected elective (as per Table 5-1)
Required

Course Outcomes (COs)

CO1: Understand the DC and AC characteristics of operational amplifiers and its effect on output and their compensation techniques.

CO2: Understand & demonstrate different applications based on operational-amplifier

CO3: Understand Timer IC 555 and PLL & demonstrate different applications based on it.

CO4: Differentiate A/D and D/A converter, understand their types and analyze their applications.

CO5: Demonstrate the various applications of special Function ICs such as Voltage regulators and amplifiers

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k	l
CO1	H	M	M	H	H		M	H	H	L	L	M
CO2	H	M	M	H	H		M	H	H	L	L	M
CO3	H	M		H	H		M	H	H	L	L	M
CO4	H	M		H	H		M	H	H	L	L	M
CO5	H	M	M	H	H		M	H	H	L	L	M

List of Topics Covered

UNIT I   INTEGRATED CIRCUITS   9
Classification, chip size and circuit complexity, basic information of Op-amp, differential op-amp, ideal and practical Op-amp, Op-amp characteristics, DC and AC characteristics, 741 op-amp and its features, modes of operation-inverting, non-inverting, Slew rate- Methods of improving slew rate.

UNIT II   OP-AMP APPLICATIONS   9
Basic application of Op-amp, instrumentation amplifier, V to I and I to V converters, Differentiators and Integrators, Comparators, Schmitt trigger, Multivibrators , Log and antilog amplifiers ,Non-Linear Function Generator, Triangle Wave Generator.

UNIT III   TIMERS & PHASE LOCKED LOOPS   9
Introduction to 555 timer, functional diagram, monostable and astable operations and applications, Voltage Controlled Oscillator, PLL - introduction, block schematic, Principles and description of individual blocks of 565- Applications.

UNIT IV   D-A AND A- D CONVERTERS   9
Introduction ,High speed sample and hold circuit , basic DAC techniques, weighted resistor DAC, R-2R ladder DAC, inverted R-2R DAC, Different types of ADCs - parallel comparator type ADC, counter type ADC, successive approximation ADC and dual slope ADC. DAC and ADC specifications, voltage to time and voltage to frequency converters.

UNIT V   SPECIAL FUNCTION ICS   9
Voltage regulators-linear and switched mode types, Frequency to voltage converters, Tuned amplifiers, Power amplifiers, Video amplifiers, Fiber optics ICs and optocouplers