

EE202: LINEAR INTEGRATED CIRCUITS
CREDITS = 6 (L=4, T=0, P=2)

Course objective:

The subject aims to provide the student with:

- C1. An understanding of basic abstractions of major fields of an Operational Amplifier on which analysis and design of various electronics and electrical applications are possible.
- C2. The capability to use abstractions to comprehend and analyze different Op-Amp ICs in terms of performance and discrepancies.
- C3. Knowledge for learning advanced topics in Linear Integrated Circuits.
- C4. The capability to improve the knowledge of different application of an op-amp ICs in the field and executive their own systems

Teaching and assessment scheme:

Teaching Scheme			Credit	Marks Distribution				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE	CE	ESE	CE	
4	0	2	6	70	30	30	20	150

Course contents:

Unit No.	Topics	Teaching Hours
1	<u>Characteristics of Op-Amp:</u> Ideal OPAMP characteristics, DC characteristics, AC characteristics, differential amplifier; frequency response of OP-AMP, Basic applications of op-amp – Inverting and Non-inverting Amplifiers, Offset compensating techniques of Op-Amp, V/I & I/V converters summer, differentiator and integrator	13
2	<u>Applications of Op-Amp:</u> Instrumentation amplifier, Log and Antilog amplifiers ,first and second order active filters, comparators, multivibrators, waveform generators, clippers, clampers, peak detector, S/H circuit, D/A converter (R/2R ladder and weighted resistor types), A/D converter using op-amps.	15
3	<u>Multifunction liner ICs:</u> Functional block, characteristics & application circuits with 555 Timer IC; 566- voltage controlled oscillator IC, 565-phase lock loop IC, Analog multiplier ICs, Phase locked loop (PLL) ICs.	13
4	<u>Working & Application of linear ICs:</u> IC voltage regulators - LM78XX, 79XX, Fixed voltage regulators-LM 317,723 Variable voltage regulators switching regulator-SMPS-, LM 380 power amplifier, ICL 8038 function generator IC.	13
TOTAL		54

List of references:

1. Ramakant A.Gayakward, "*Op-amps and Linear Integrated Circuits*", IV edition, Pearson Education, 2003 / PHI. 2000.
2. D. Roy Choudhry, Shail Jain, "*Linear Integrated Circuits*", New Age International Pvt. Ltd., 2000.
3. Robert T. Paynter, "*Introductory Electronic Devices and Circuits*", Pearson Education
4. A. V. Boylestad and Nashelsky, "*Electronic Devices and Circuits*", Prentice Hall of India
5. Schilling and Belove, "*Electronic Circuits*", McGraw Hill.

Course outcomes (co):

After learning this course the students will be able to:

- CO1. Assess the knowledge about the Linear Integrated Circuits and its applications.
- CO2. Basic structure and different characteristics of an Op-Amp.
- CO3. Practice the fundamentals of Op-amp applications. CO4. Interpret the working and applications of various types op-amp and its applications.
- CO5. Associate the knowledge about Special ICs and its operations.
- CO6. Comprehend the advance subjects of electrical engineering