

3EL03: ANALOG CIRCUIT DESIGN LABORATORY CREDITS - 1 (LTP: 0,0,1)

Course Objective:

1. The main objective of this course is to study the basic principles, configurations and practical limitations of op-amp and to understand the various linear and non-linear applications of op-amp.
2. The course aims to make the student familiar with comparators, convertors, active filters, special purpose ICs, their principles and applications.

Teaching and Assessment Scheme:

Teaching Scheme (Hours per Week)			Credits	Assessment Scheme				
L	T	P		C	Theory Marks		Practical Marks	
			ESE		CE	ESE	CE	
0	0	2	1	-	-	40	60	100

Experiment List:

Sr. No.	Suggested List of Experiments
1.	Measurement of input and output offset voltage of 741 ICs.
2.	To configure op-amp in voltage follower mode and to measure its slew rate.
3.	To configure op-amp in inverting and non-inverting amplifier mode and measure their gain and bandwidth.
4.	Use op-amp for its linear applications like adder, summing amplifier, Integrator and Differentiator.
5.	To prepare precision rectifier using op-amp and verify its operation using measurements.
6.	To prepare half and full-wave rectifier using op-amp and verify its operation using measurements.
7.	To measure PSRR and CMRR of given op-amp.
8.	Measurement of regulation factor using voltage regulator ICs.
9.	To design, build and obtain the frequency responses of first order low pass filter.
10.	To design, build and obtain the frequency responses of band pass active filter.
11.	Mini Project

List of References:

1. Ramakant A. Gayakwad, "Op-amps and Linear Integrated Circuits", PHI Publication, 4th Edition.
2. Roy Choudhury and Shail Jain, "Linear Integrated Circuits", Wiley Eastern Ltd, 3rd Edition.

3. Sergio Franco, "Design with operational amplifier and analog integrated circuits", McGraw Hill, 3rd Edition.

Course Outcomes (COs):

At the end of this course students will demonstrate the ability to

1. Measure the parameters mentioned in datasheets of op-amp.
2. Test and Analyze negative feedback amplifier, Linear and non-linear circuits.
3. Analyze the op-amp based filters.
4. Design the op-amp based mini project.