

GOPALAN COLLEGE OF ENGINEERING AND MANAGEMENT

Department of Electronics and Communication

Academic Year: **2016-17**

Semester: **EVEN**

COURSE PLAN

Semester: **IV**

Subject Code& Name: **15EC46 & Linear Integrated Circuits**

Name of Subject Teacher: **Supreetha K**

Name of Subject Expert (Reviewer): **Kavitha M.V**

For the Period: From: 13-02-17 to 02-06-17

Details of Book to be referred:

Text Books	<p>T1: David A. Bell “Operational Amplifiers and Linear IC’s”, 2nd edition, PHI/Pearson, 2004</p> <p>T2: D. Roy Choudhury and Shail B. Jain “Linear Integrated Circuits”, 2nd edition, New Age International, , Reprint 2006</p>
Reference Books	<p>R1: Ramakant A Gayakwad, “Op-Amps and Linear Integrated Circuits,” Pearson, 4th Ed, 2015. ISBN 81-7808-501-1.</p> <p>R2. B Somanathan Nair, “Linear Integrated Circuits: Analysis, Design & Applications,” Wiley India, 1st Edition, 2015.</p> <p>R3. James Cox, “Linear Electronics Circuits and Devices”, Cengage Learning, Indian Edition, 2008, ISBN-13: 978-07-668-3018-7.</p> <p>R4. Data Sheet: http://www.ti.com/lit/ds/symlink/tl081.pdf.</p>

Lecture NO	Topic Planned	Practical Applications & Brief objectives	Book referred with Pg No.	Planned Date	Executed Date	Deviation Reasons thereof	How Made Good / Reciprocate arrangement	Remarks by HOD
1.	Introduction	<p>Objective: To introduce the basic building blocks of linear integrated circuits.</p> <p>Application: Averaging amplifier, subtractor ,impedance matching etc</p> <p>Outcome: Having successfully completed the course, the student will be able to demonstrate knowledge and understanding of Operational amplifiers with linear integrated circuits</p>		06-02-17				
2.	Module 1: Basic Op-Amp Circuit		T1 :14-21	07-02-17				
3.	Op amp parameters: Input and output voltage		T1:22-26	08-02-17				
4.	CMRR and PSRR		T1:22-26	09-02-17				
5.	offset voltages and currents		T1:27-30	10-02-17				
6.	Input and output impedances		T1:31-35	13-02-17				
7.	Slew rate and Frequency limitations		T1:43-45	14-02-17				
8.	Op-Amps as DC Amplifiers- Biasing Op-Amps		T1:46-47	15-02-17				
9.	Direct coupled –Voltage Follower		T1:46-47	16-02-17				
10.	Direct coupled –Voltage Follower		T1:46-47	20-02-17				
11.	Direct coupled Inverting amplifiers		T1:48-51	21-02-17				
12.	Summing amplifiers,		T1:57-60	22-02-17				
13.	Difference amplifier		T1:61-63	27-02-17				
14.	Common mode voltage		T1:63	28-02-17				
15.	Test for module 1			01-03-17				
16.	Module 2: Capacitor coupled Voltage Follower	Objective: Understanding the basics of Op-Amps	T1:79-81	03-03-17				

17.	High input impedance - Capacitor coupled Voltage Follower	as AC Amplifiers Application: connect ac and dc signals Outcome: The design of circuits using operational amplifiers for various applications	T1:82-84	03-03-17					
18.	Capacitor coupled Non-inverting Amplifiers, High input impedance - Capacitor coupled Noninverting Amplifiers		T1:85-88	04-03-17					
19.	Capacitor coupled Inverting amplifiers		T1:88-92	06-03-17					
20.	setting the upper cut-off frequency, Capacitor coupled Difference amplifier		T1:92-94	07-03-17					
21.	Use of a single polarity power supply,		T1:96-100	08-03-17					
22.	instrumentation amplifier ,precision rectifiers		T1:66-72	13-03-17					
23.	Current amplifiers		T1:157-159	14-03-17					
24.	Voltage sources current sources and current sinks		T1:152-158	15-03-17					
25.	Module 3: Limiting circuits, Clamping circuits		Objective: To teach the linear and non-linear applications of operational amplifiers Application: communication systems Outcome: Having successfully completed the course, the student will be able to	T1:224-234	17-03-17				
26.	Sample and hold circuits,			T1:239-242	17-03-17				
27.	V to I and I to V converters			20-03-17					
28.	Peak detectors,	T1:235-238		21-03-17					
29.	Log amplifier, antilog amplifiers,			22-03-17					
30.	Multiplier and divider.			27-03-17					

31.	Wein bridge oscillator,	demonstrate knowledge and understanding of The design of circuits using operational amplifiers for various applications.	T1:297-299	28-03-17				
32.	Phase shift oscillator,		T1:290-292	31-03-17				
33.	Crossing detectors,		176	31-03-17				
34.	Schmitt trigger.		T1:182-188	03-04-17				
35.	Differentiating Circuit,		T1:197-203	04-04-17				
36.	Integrator Circuit,		T1:204-207	05-04-17				
37.	Test on module 2& 3			07-04-17				
38.	Module 4 Active Filters First order active Low-pass and high pass filters	Objective: The analysis, design and explain the characteristics and applications of active filters, To introduce Other Linear IC applications Application: radio, television, telephone, radar, space satellites OUTCOME: , the student will be able to demonstrate knowledge and understanding of The analysis, design	T1:321-234	07-04-17				
39.	First order active Low-pass and high pass filters		T1:321-324	10-04-17				
40.	second order active Low-pass and high pass filters,		T1:326-330	11-04-17				
41.	second order active Low-pass and high pass filters,		T1:326-330	12-04-17				
42.	Bandpass Filter		T1:335-340	21-04-17				
43.	Bandstop Filter		T1:341-342	21-04-17				
44.	Voltage Regulators: Introduction, Series Op-amp regulator		T1:362-366	24-04-17				

45.	IC voltage regulators.	and explain the characteristics and applications of active filters, To introduce Other Linear IC applications.	T1:367-370	28-04-17				
46.	IC voltage regulators.		T1:3367-370	26-04-17				
47.	723 general purpose regulators.		T1:376-381	28-04-17				
48.	723 general purpose regulators.		T1:376-381	28-04-17				
49.	723 general purpose regulators.		T1:376-381	02-05-17				
50.	Module -5 Other IC applications,555 timer,Astable Multivibrator	Objective: To teach the theory of ADC and DAC To introduce Other Linear IC applications Application: radio, television, telephone, radar, space satellites	T1:248-249	03-05-17				
51.	Monostable multivibrator		T1:251-257	05-05-17				
52.	PLL		T1:473-476	05-05-17				
53.	VCO		T1:485-488	08-05-17				
54.	Monolithic PLL		T1:488	09-05-17				
55.	DAC	T1:454	10-05-17					
56.	ADC	OUTCOME: Having successfully completed the course, the student will be able to demonstrate knowledge and understanding of Explain and compare the working of multivibrators using special application IC 555 and general purpose opamp.	T1:454	12-05-17				

57.	Phase detector		T1:485	12-05-17				
58.	Numericals			19-05-17				
59.	Test on module 4&5			19-05-17				
60.	Revision on module 1			29-05-17				
61.	Revision on module 2			30-05-17				
62.	Revision on module 3			31-05-17				
63.	Revision on module 4			02-06-17				
64.	Revision on module 5			02-06-17				

Prepared By: _____
 (Faculty)
 Date & Sign _____

Reviewed by: _____
 (Sub. expert)
 Date & Sign _____

Approved by: _____
 (HOD)
 Date & Sign _____

Approved by: _____
 (Principal/ Acad. Co)
 Date & Sign _____