National Institute of Technology Meghalaya

An Institute of National Importance

CURRICULUM

Programme	**Bachelor of Technology in Electronics and Communication Engineering**	Year of Regulation	**2018-2019**
Department	Electronics and Communication Engineering	Semester	**V**

Course Code	Course Name	Credit Structure				Marks Distribution			
		L	T	P	C	INT	MID	END	Total
EC 321	**Linear Integrated Circuits**	**3**	**0**	**0**	**3**	**50**	**50**	**100**	**200**

Course Objectives		Of Course Outcomes		
	To make the students to understand Signal analysis using Op-amp based circuits.		CO1	Ability to analyze the characteristics of Op-Amp
	To understand functional blocks and the applications of special ICs like Timers, PLL circuits, regulator Circuits		CO2	Abiity to realize the importance of Signal analysis using Op-amp based circuits
	To Develop applications of Op-amp integrated circuits		CO3	Functional blocks and the applications of special ICs like Timers, PLL circuits, regulator Circuits.
	To report the Operation of IC voltage regulators, SMPS & Function generators		CO4	Abilty to build Applications with the help of Op-amp integrated circuits
			CO5	Ability to understand and analyse, linear integrated circuits their and Application.

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs			
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
1	CO1	-	**1**	**3**	-	-	-	-	-	-	-	-	-	**3**	**2**	**2**	-
2	CO2	**2**	**2**	**3**	**3**	-	-	-	-	-	-	-	-	**2**	**2**	**2**	-
3	CO3	**2**	-	**2**	-	-	-	-	-	-	-	-	-	**2**	**2**	**2**	-
4	CO4	**2**	-	**1**	**2**	-	-	-	-	-	-	-	-	**3**	**3**	**3**	-
5	CO5	-	**1**	**3**	**3**	-	-	-	-	-	-	-	-	**3**	**2**	**2**	-

SYLLABUS

No.	Content	Hours	COs
I	Ideal OP-AMP characteristics, DC characteristics, AC characteristics, differential amplifier; frequency response of OP-AMP; Basic applications of op -amp – Inverting and Non-inverting Amplifiers, summer, differentiator and integrator-V/I & I/V converters.	**10**	**CO1**
II	Instrumentation amplifier and its applications for transducer Bridge, Log and Antilog Amplifiers- Analog multiplier & Divider, 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 converters using opamps, positive and negative FeedBack amplifiers, opamp-small signal analysis,	**12**	**CO2, CO3**
III	Functional block, characteristics of 555 Timer and its PWM application - IC-566 voltage controlled oscillator IC; 565-phase locked loop IC, Schmitt trigger, AD633 Analog multiplier ICs.	**6**	**CO3, CO4**
IV	AD623 Instrumentation Amplifier and its application as load cell weight measurement - IC voltage regulators –LM78XX, LM79XX; Fixed voltage regulators its application as Linear power supply - LM317, 723 Variability voltage regulators, switching regulator- SMPS - ICL 8038 function generator IC.	**08**	**CO2, CO3, CO5**
	Total Hours	**36**	

Essential Readings

1. David A. Bell, “Op-amp & Linear ICs”, Oxford, 2nd edition, 2013.
2. D. Roy Choudhary, Sheil B. Jani, “Linear Integrated Circuits”, New Age Publisher, 2nd edition, 2003.
3. Ramakant A.Gayakward, ‘Op-amps and Linear Integrated Circuits’, Pearson Education, 4th edition, 2015

Supplementary Readings

1. Fiore,”Opamps & Linear Integrated Circuits Concepts & applications”, Cengage Learning, Ist edition, 2010.
2. Floyd ,Buchla,”Fundamentals of Analog Circuits”, Pearson Education , 2nd edition, 2001
3. Jacob Millman, Christos C.Halkias, “Integrated Electronics - Analog and Digital circuits system”, McGraw Hill, 2nd edition , 2017.
4. Robert F.Coughlin, Fredrick F. Driscoll, ‘Op-amp and Linear ICs’, Pearson Education, 6th edition, 2000.