1.	Title of the course	Linear Integrated Circuits Theory and Applications
2.	Course number	EE515L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To EE5027/7
6.	To be offered by	Department of Electrical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	CoT
9.	**Course Objective(s):** To introduce fundamental concepts and applications based on operational amplifier (op-amp). To improve the students ability to analyse simple as well as complex analog circuits and quantify their performance. To enable the student to design various analog systems.	
10.	**Course Content:** Operational Amplifers: introduction, ideal operational amplifier (opamp) and its characteristics. Practical op-amp: introduction, static and dynamic opamp limitations. Amplifiers and Oscillators: differential input and differential output amplifier, voltage-series feedback amplifier, voltage-shunt feedback amplifier, log and antilog amplifier, triangular and rectangular wave generator, phase-shift oscillators, wein bridge oscillator, analog multiplier, voltage controlled oscillator. Active Filters: characteristics, classification of filters, magnitude and frequency response, butter worth 1st and 2nd order low pass, high pass and band pass filters, chebyshev filter characteristics, band reject filters, notch filter, all pass filters, self-tuned filters, switched capacitor filters. Comparators and Converters: comparator, zero crossing detector, monostable and astable multivibrator, schmitt trigger, sample and hold circuit. Advanced applications : frequency divider, PLL, AGC, AVC using op-amp and analog multipliers, amplitude modulation using analog multiplier, frequency shift keying, simple op-amp voltage regulator, fixed and adjustable voltage regulators	
11.	**Textbook(s):** 1. Franco S, *Design with Operational Amplifiers and Analog Integrated Circuits*, Tata McGraw-Hill (2002). 2. Clayton G, Winder S, Operational Amplifiers, Newnes, (2003).	
12.	**Reference(s):** 1. Sedra A S, Smith K C, Microelectronic Circuits Theory and Applications, Oxford, (2017) 2. Neamen D A, *Electronic Circuit Analysis and Design*, Tata McGraw-Hill (2006).	