

**INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI  
PROFORMA FOR NEW COURSE**

1.	Title of the Course	Linear Integrated Circuits Theory and Applications
2.	Course Number	EE5027
3.	Status of the Course	Elective
4.	Structure of Credits	3-0-0-3
5.	Offered To	PG
6.	New Course/Modification to	New
7.	To be Offered by	Dr. Prashanth Vooka
8.	To take effect from	January 2019
9.	Prerequisite	CoT
10.	Whether approved by the Department	Yes
11.	<b>Course Objective:</b> 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.	
12.	<b>Course Content:</b> Operational Amplifiers: introduction, ideal operational amplifier (op-amp) and its characteristics. Practical op-amp: introduction, static and dynamic op-amp 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	
13.	Text book(s): 1. Franco, S., <i>Design with Operational Amplifiers and Analog Integrated Circuits</i> , Tata McGraw-Hill, (2002). 2. Clayton, G., Winder, S., <i>Operational Amplifiers</i> , Newnes, (2003).	
14.	Reference(s): 1. Sedra, A. S., Smith, K. C. <i>Microelectronic Circuits Theory and Applications</i> , Oxford, (2017). 2. Neamen, D. A., <i>Electronic Circuit Analysis and Design</i> , Tata McGraw-Hill, (2006).	