No	Course Information (2019-2020)	
1	Unit name:	Integrated Electronics I (2019-2020)
2	Code:	EcE 31021
3	Classification:	Engineering subject
4	Credit value:	3 (2-1-1)
5	Semester/ Year Offered:	1/3
6	Pre-requisite:	EcE 21011&22011, Microelectronics I & II
7	Mode of delivery:	Lecture, Practical, Tutorial
8	Assessment system and breakdown of marks:	Tutorial, Lab Report , Lab activity
	Tutorial	10%
	Practical	20%
	Mid-term Examination	70%
9	Academic staff teaching unit:	Department of Electronic Engineering
10	Course outcome of unit: In this course, students will be able • To describe operation of various semiconductor devices, switching circuits, amplifier circuit, BJTs and FETs amplifier frequency response. • To calculate the parameters of amplifiers and switching circuits. • To simulate various types of amplifier circuit using Multisim software.	
11	Synopsis of unit: The course introduces students to learn the basics of operational amplifiers and general purpose of op-amp as basic and advanced aspects of analog integrated circuit design and about stability requirements and how to compensate op-amp circuit to ensure stable operation. In practical op-amp circuits, its parameters that will be consider in detail. Application and design of integrated circuits is to increase the skills of designing electronics circuits to meet particular specifications and to perform particular function.	
	Topic:	

	Chapter	Title
	10	**Amplifier Frequency Response**
		10–1 Basic Concepts
		10–2 The Decibel
		10–3 Low-Frequency Amplifier Response
		10–4 High-Frequency Amplifier Response
		10–5 Total Amplifier Frequency Response
		10–6 Frequency Response of Multistage Amplifiers
		10–7 Frequency Response Measurements
	11	**Thyristors**
		11–1 The Four-Layer Diode
		11–2 The Silicon-Controlled Rectifier (SCR)
		11–3 SCR Applications
		11–4 The Diac and Triac
		11–5 The Silicon-Controlled Switch (SCS)
		11–6 The Unijunction Transistor (UJT)
		11-7 The Programmable Unijunction Transistor (PUT)
	12	**The Operational Amplifier**
		12–1 Introduction to Operational Amplifiers
		12–2 Op-Amp Input Modes and Parameters
		12–3 Negative Feedback
		12–4 Op-Amps with Negative Feedback
		12–5 Effects of Negative Feedback on Op-Amp Impedances
		12–6 Bias Current and Offset Voltage
		12–7 Open-Loop Frequency and Phase Responses
		12–8 Closed-Loop Frequency Response
		12–9 Troubleshooting
	13	**Basic Op-Amp Circuits**
		13–1 Comparators
		13–2 Summing Amplifiers
		13–3 Integrators and Differentiators
		13–4 Troubleshooting
14	Main references:	

	THOMAS L. FLOYD, ELECTRONIC DEVICES(9th Edition) DONALD A NEAMEN, Microelectronics: Circuit Analysis and Design, 4th Edition S SALIVAHANAN, V S KANCHANA BHAASKARAN; LINEAR INTEGRATED CIRCUITS
15	Additional references: 1:http//www.amazon.com > microelectronics, 2:http//www.pearsonhighrged.com/fioyd 3:http//pdfs.semanticscholar.org>

Information on Lab Practical (Integrated Electronics)

Lab	Activity
1	**Experiment**: **1 Low Frequency Response of RC Amplifier using Multisim Software** **Objectives**: • To constructs the RC amplifier. • To recognize the low frequency response of amplifier **Require Equipment**: • Computer & Multisim Software
2	**Experiment**: **2 Inverting and Non-inverting Amplifier using Multisim Software** **Objectives**: • To construct the Inverting and Non-inverting Amplifier. • To recognize the phase variations of input and output waveform. **Require Equipment**: • Computer & Multisim Software
3	**Experiment: 3 Comparator circuit using Multisim Software** **Objectives**: • To construct the comparator circuit. • To recognize the output waveform. **Require Equipment**: • Computer & Multisim Software

4	**Experiment: 4 Summing Amplifier circuit using Multisim Software** **Objectives**: • To construct the Summing Amplifier circuit. • To recognize the output waveform. **Require Equipment**: • Computer & Multisim Software
5	**Experiment: 5 Integrator and Differentiator circuit using Multisim Software** **Objectives**: • To construct the Integrator and Differentiator circuit. • To recognize the output waveform. **Require Equipment**: • Computer & Multisim Software