PVP20

ELECTRONIC DEVICES AND AMPLIFIER CIRCUITS

Course Code	**20EE3301**	**Year**	II	**Semester**	I
Course Category	Program Core	**Branch**	EEE	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	BEEE
Continuous Internal Evaluation	30	**Semester End Evaluation**	70	**Total Marks**	100

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	**Describe** the basic concepts of BJT, MOSFET Circuits and IC design Philosophy**. (L2)**
CO2	**Analyze** the BJT and MOSFET Characteristics. **(L4)**
CO3	**Analyze** the Amplifiers using MOSFET **(L4)**
CO4	**Apply** the different biasing techniques of BJT, MOSFET and IC Design **(L3)**

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO1	PSO2
CO1	2									2			2	
CO2		3								3			3	
CO3		3								3			3	
CO4	3									3			3	
20EC3301 OVERALL WEIGHTS	3	3								3			3	

Syllabus		
Unit No.	**Contents**	**Mapped CO**
I	**Bipolar Junction Transistors:** Device structure and physical operation, current-voltage characteristics, the BJT as an amplifier and as a switch, biasing in BJT amplifier circuits, small signal operation and models.	CO1,CO2,CO4
II	**MOS Field-Effect Transistors:** Device structure and physical operation, current-voltage characteristics, the MOSFET as an amplifier and as a switch, biasing in MOS amplifier circuits, small signal operation and models.	CO1,CO2,CO4

III	**Single Stage MOSFET Amplifiers:** Estimating 3dB frequency of amplifiers, Basic MOSFET amplifier configurations, MOSFET internal capacitances and high frequency model. Low Frequency and High Frequency Response Of MOSFET Amplifiers	CO1,CO3
IV	**Differential Amplifiers:** The MOS differential pair, small-signal operation of the MOS differential pair, other non-ideal characteristics of MOS differential amplifier, the MOS differential amplifier with active load, multistage MOS amplifiers.	CO1,CO3
V	**IC Design Philosophy**: Comparison of the MOSFET and the BJT, IC biasing-current sources, current mirrors and current-steering circuits,	CO1,CO4

Learning Resources
Text Books
1.Adel S. Sedra, Kenneth C. Smith, Arun N. Chandorkar, Microelectronic Circuits, 6/e, Oxford University Press, 2013.
Reference Books
1. BehzadRazavi, Fundamentals of Microelectronics, 2/e, Wiley Student Edition, 2013. 2. Robert L. Boylestad, Louis Nashelsky, Electronic Devices and Circuits Theory, 10/e, Pearson Education, 2009. 3. Dharma Raj Cheruku, B T Krishna, Electronic Devices and Circuits, 2/e, Pearson Education, 2008.
e- Resources & other digital material
http://www.faadooengineers.com/threads/4615-Electronic-Devices-and-Circuit-Theory-Boylestad-and-Nashelsky https://docplayer.net/53934331-J-b-gupta-electronic-devices-and-circuits.html