Date: 12 /01 /2016

In addition to part-I (General Handout for all courses appended to the time-table), this portion gives further specific details regarding the course.

Course No. **: EEE F 244 / INSTR F 244**

Course Title **: Microelectronic Circuits**

Instructor-in-charge **: ANU GUPTA**

Team of Instructor **:**Babu Ravi Teja, Snehlata Murotiya, Arnab Hazra, Kavindra Kandpal, Mahesh Angira

1. **Scope and Objective of the Course:**

The objective of this course is to develop an ability to analyze and design integrated electronic circuits. The course aims at thorough understanding of electronic circuits & building blocks necessary for effective realizations of integrated circuits. The course also includes the usage of SPICE as a circuit design aid.

2. **Text Book:**

Adel. S. Sedra, Kenneth C Smith, "Microelectronic Circuits", Oxford University Press, Fifth Edition.

3. **Prime Reference Book/s:**

(i) Behzad Razavi**, "**Design of Analog CMOS Integrated Circuits", TATA McGRAW Hill, 2001.

4. **Other reference books**

(i) Richard. C. Jaeger, "Microelectronic Circuit Design", Tata McGraw-Hill Companies Inc., International Edition.

(ii) R.Jacob.Baker, Harry.W.Li, David.Boyce, "CMOS circuit Design Layout and simulation. "IEEE Press series on Microelectronic Systems, PHI.

5 Course Plan :

S. No.	Topic	Learning Objective	No. of Lectures	Ref. From the Text Book (Article)

1.	Introduction to Amplifiers	Characteristic of Amplifiers	2	Text chapter-1 1.4, 1.5,1.6
2	Models of MOSFET, physics of MOSFET	MOS device physics	2	Text ch-1, 4 Prime Ref -chapter 2
3.	Integrated circuit MOSFET Amplifier circuits, and Frequency response	IC MOSFET Amplifier design	3	Prime Ref —ch. 3, ch. 7, Text Ch 4--4.5, 4.6, 4.7, 4.8, 4.9, Ch. 6
4.	Integrated circuit BJT Amplifiers, frequency response and BJT models	Discrete and IC BJT Amplifier Design	3	Text Ch 5--5.5, 5.6, 5.7, 5.8, 5.9, Ch. 6
5.	Differential amplifiers	Design of differential amplifiers	6	Prime Ref -Ch. 4 Text --Ch.7
6.	Passive and active current mirrors.	Design of IC bias circuits	4	Prime Ref Ch. 5 Text Ch.6
7.	Feedback	Study of feedback	9	Prime Ref ch-8 Text Ch.8
8.	Operational Amplifiers	Design and characterization of an integrated circuit OP-AMP	6	Prime Ref ch-9 Text Ch. 9,
9.	Stability & frequency compensation in OP AMP, Noise	Techniques for stability of opamp in feedback mode.	5	Prime Ref ch.-10, 7 Text ch-8
10	Illustrative examples of integrated electronic systems—an overview	Building of electronic systems	2	To be announced
		Total	(42)	

6. **Evaluation Scheme:**

EC No.	Components	Duration	Marks/ weightage	Date & Time	Remarks
1	Mid semester test	90 mts.	90 (30 %)	16/3 9:00 - 10:30 AM	CB/ OB
3	Regular Quiz		60 (16.6%)		OB
4	Assignments /online-test	Regular	40 (16.6%)	To be announced	OB
5	Comprehensive Exam	3 hrs.	110 (36.6%)	7/5 FN	CB
Total			**(300)**		

7. **Assignment/s :**
   - SPICE based circuit design and analysis assignments
   - Practice of SPICE software

8. **Chamber Consultation Hour:** Contact IC to fix a time

anug@pilani.bits-pilani.ac.in

9. **Notices :** All notices related to the course will be put on the **EEE** Notice board.

Instructor-in-charge