Birla Institute of Technology & Science, Pilani
Hyderabad Campus

SECOND SEMESTER 2021-2022

Course Handout Part II

Date : 15-01-2022

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 F246
Course Title : Electrical and Electronic Circuits Laboratory
Instructor-in-Charge : **BVVSN Prabhakar Rao**

Instructors:
Signals & Systems Lab : **Dr. Prabhakar Rao,** Dr. R. Venkateswaran & Rabindra Mohanty
Microelectronics Circuits Lab : **Dr**. **Syed Ershad Ahmed** & Dr. Joyjit Mukherjee

Research Scholars:
Signals & Systems Lab**:** Himanshi Awasthi & Naresh Bahadursha
Microelectronics Circuits Lab : Adepu Vivek, PN Sidhartha & Samit Kumar Ghosh, Jisy NK

Scope and Objective of the Course: A thorough understanding of the elementary principles of Electrical and Electronics circuits and Signals and response of Systems to signals is fundamental to Electrical, Electronic and Instrumentation Engineers. This Laboratory course gives hands-on experience to the theoretical concepts covered in the theory courses.

Textbooks:

1. Lab Manual on Microelectronic Circuits
2. Lab Manual on Signals & Systems

Course Plan:

The laboratory classes will be conducted in the Microelectronic Circuits and Signals and Systems Laboratories. The practicals are intended to provide hands-on experience on the concepts learned in the Microelectronic Circuits and Signals and Systems courses. Details of the experiments will be available in the “Laboratory Manual”. Laboratory marks mentioned includes marks for record and attendance in lab practical.

List of Experiments in Microelectronics Circuits Lab (using LTSpice)

1. **Introduction to LTSPICE electronics laboratory**
2. **Applications of diode (a) Diode Characteristics (b) Clippers and Peak detector**
3. **Performance measurement of regulated DC power supply**
4. **Characteristics of BJT in different configuration**
5. **Frequency response of common-emitter BJT amplifier**
6. **Characteristics of MOSFET in different configuration**
7. **Frequency Response of common-Emitter (CE) MOSFET amplifier**
8. **Frequency Response of common-source (CS) MOSFET amplifier**
9. **Design of a Current Mirror Circuit**
10. **Design of a Differential amplifier Circuit**

List of Experiments in Signals and Systems Lab (using Matlab)

1. **Familiarization with Matlab**
2. **Matrices & Plots**
3. **Relational operators, loops & functions**
4. **Generation, windowing and time operation of signals**
5. **Synthesis of signals using Fourier Series**
6. **Convolution on continuous time signals**
7. **Laplace Transforms**
8. **Sampling and Reconstruction**
9. **DFT & IDFT of given signals Using FFT**
10. **Study of Analog Filters**

Evaluation Scheme:

Component	Duration	Weightage (%) / Marks	Date & Time	Nature of Component
Laboratory Practical Regular class work	4 hours/ week	50% / (100 M)	Regular lab Performance	Open Book
Midterm Lab Quiz/ Assignment	TBA	20% /(40M)	TBA	Open Book/Closed book (**)
Comprehensive Lab Hands on Test / Quiz/Assignment	TBA	30% /(60M)	TBA	Open Book/Closed book (**)

Note : (1) TBA: To be announced (2) (**) : subject to the online (Open book) /off-line (closed book) exam

Chamber Consultation Hour: Chamber consultation hours of Instructors will be announced separately.

Notices: All notices of this course will be displayed in CMS

Make-up Policy: One Lab Make-up will be granted for genuine reasons, only when prior-permission is obtained from Instructor-in-charge.

Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

INSTRUCTOR-IN-CHARGE