



SECOND SEMESTER 2019-2020

Course Handout Part II

06-01-2020

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

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| <i>Course No.</i> | : EEE F246 |
| <i>Course Title</i> | : Electrical and Electronic Circuits Laboratory |
| <i>Instructor-in-Charge</i> | : Prasant Kumar Pattnaik |
| <i>Instructors team</i> | : Prof. Prabhakar Rao, Dr. R. Venkateswaran, Dr. Souvik Kundu, Dr. Rajesh Tripathy, Dr. Sudha Radhika, Dr. Parikshit Sahatiya |

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 course.

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

1. **Introduction to electronics laboratory: (a) Passive components (b) Measurement equipment**
2. **Applications of diode (a) Diode Characteristics (b) Clippers and Peak detector**
3. **Performance measurement of regulated DC power supply**
4. **Characteristics of MOSFET in common-source (CS) configuration**
5. **Frequency Response of common-source (CS) MOSFET amplifier**
6. **Characteristics of BJT in common-emitter (CE) configuration**
7. **Characteristics of BJT in common-base (CB) and common-collector (CC) configurations**



8. Frequency response of common-emitter BJT amplifier
9. Design of current mirror using PSPICE
10. Design of differential amplifier using PSPICE

List of Experiments in Signals and Systems with Matlab

1. Familiarization with Matlab
2. Matlab Exercises
3. Generation of Signals
4. Signal operations (scaling, shifting, inversion)
5. Synthesis of signals using Fourier Series
6. Convolution
7. Laplace Transforms
8. Sampling and Reconstruction
9. Generation of Spectrum of signals Using FFT
10. Analog Filters

Evaluation Scheme:

| Component | Duration | Weightage (%) | Date & Time | Nature of Component |
|--|------------------|---------------|----------------------------|---------------------|
| Laboratory Practical Regular class work | 4 hours/ week | 40% | Regular lab Performance | Open Book |
| Lab Quiz | | 30% | Will be announced | Closed Book |
| Lab Hands on Test | | 30% | Will be announced | Closed Book |

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

