Department of Electrical Engineering, IIT Kanpur   January 2018
ESC201A: Introduction to Electronics   3-1-3-0

Course Objectives

The course is designed to facilitate understanding of introductory concepts in electronics. Accordingly, the course objectives are outlined here,

1. Introduction to the broad area of electronics

2. Analyze and design electronic circuits

3. Gain hands on experience in building and analyzing electronic circuits in the laboratory

Course Contents

- Circuit Analysis Techniques, Nodal, Mesh, Superposition, Thevenin, Norton

- Transient Analysis of RL and RC Circuits

- Sinusoidal Steady State Analysis

- Transfer Function and Frequency Response

- Semiconductors, Diodes and diode Circuits

- Transistors and Amplifiers

- Operational Amplifiers and waveform Generation

- Numbering system, logic gates, Combinational circuits

- Flip-flops, Sequential Circuit Design

- Data Converters

These topics will be accompanied by relevant practical experiments performed in laboratory.

Course Instructor: Dr. G Rajshekhar
Email: gshekhar@iitk.ac.in
Class Room: L20
Time: M W Th 5-6 PM

Lab Instructor: Dr. K S Venkatesh
Email: venkats@iitk.ac.in
Lab Rooms: CL 105B and CL 102B
Time: M T W F 2-5 PM

Course Organization

All notices for the course will be sent by email to the course email list.

Home Assignments

Home assignments will be regularly provided. The students are strongly encouraged to solve the assignment questions. The assignments will not be graded.

Tutorials

The course has regular tutorial sessions on Tuesdays from 5-6 PM. During the first 10 minutes of the tutorial, the students would be asked to solve a problem related to the homework assignment, which will be graded and used in tutorial assessment. Solutions to homework assignments will be discussed during tutorials.

Labs

The course has weekly laboratory sessions so that the students can gain relevant experience in designing and building circuits. The student's performance will be assessed in the laboratory and accordingly graded.

Grading

S. No	Description	Marks
1	Tutorial mini-quizzes	20 marks
2	Three major quizzes (best two considered)	30 marks
3	One mid-semester exam	40 marks
4	One end-semester exam	70 marks
5	One laboratory exam	20 marks
6	Weekly laboratory performance	20 marks
	Total	**200 marks**

Cheating/copying/plagiarism is strictly not allowed and liable for academic punishment as per the norms of the institute.

Attendance

Students are strongly advised to attend all classes.

Books

1. Engineering Circuit Analysis by W. Hayt, J. E. Kemmerly and S. M. Durbin, TATA McGraw Hill

2. Electronic Devices and Circuit Theory by R. Boylestad and L. Nashelsky, Prentice Hall of India

3. Microelectronics Circuits, by Sedra/Smith, 5th edition, Oxford University Press

4. Microelectronics by Millman, Grabel, 2nd edition, Tata McGraw Hill

5. Digital Design by Mano, Ciletti, 4th edition, Pearson

6. Digital Principles and Applications, by Leach, Malvino, 5th edition, Tata McGraw Hilll