

PH 207 (JAN) 1:2

Electronics I

Department of Physics
Indian Institute of Science
Bangalore 560012

January 5, 2024

Welcome!

- Welcome to all students!

Class Hours

M/W/F 16:00 to 17:00

3 hours per week

Target Audience

- Integrated PhD students of Physics

Instructor

A. Mohanty

Department of Instrumentation and Applied Physics

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Electronics I

Basic diode and transistor circuits, operational amplifier and applications, active filters, voltage regulators, oscillators, digital electronics, logic gates, Boolean algebra, flip-flops, multiplexers, counters, displays, decoders, D/A, A/D.

Introduction to microprocessors

- Horowitz and Hill, The Art of Electronics, Second Edition
- Millman and Halkias, Integrated Electronics, McGraw-Hill

Both analogue and digital electronics will be covered.

Electronic Device: A device that allows us to control the flow of electrons.

What do we gain?

Analogue Electronics

- Ability to amplify weak signals
- Amplifiers \Rightarrow oscillators, waveform generators

Digital Electronics

- Logic, computation, information processing

Objectives and Structure

Objectives

- Provide basic training in electronics.
- Enable students to build electronic systems for their own research.

Structure

- Lectures and demonstrations
- Laboratory sessions

Documentation

- Maintain a record of all laboratory work.
- Experiments will begin after a few lecture/demonstration classes.

Evaluation

- Laboratory: Attendance, completion of experiments
- Theory: Written examinations

- Requires the safety standards of an electronics laboratory
- Proper shoes
- Gloves and safety goggles if required

Topics for Revision

- Circuit Analysis
 - Transient Analysis
 - Phasor Analysis
- Passive Circuit Elements: R, C, L, M
- Laboratory Equipment

Next Class

4:00 PM

08 January 2024, Monday