# EE2001 - Digital systems lab

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# Design of digital systems

- ▶ Objective - What is the function, inputs and expected outputs.
- ▶ What is the frequency at which it is expected to work, target power dissipation.
- ▶ Design using gates, memory elements
- ▶ Logic simulation to verify correctness of design - Use a programming language.
- ▶ Timing simulation to check frequency of operation - Use a programming language.
- ▶ Implement using actual gates - Breadboard and test.
  - Need to take into account practical aspects like fan-out, driving displays etc.

## Outline and Objectives

▶ 16 credits - Combined theory course and Lab. The lab has 6 credits.

▶ Lab has two parts - Logic simulation and practical aspects of building circuits

▶ Experiments on Logic simulation will follow the theory course - It involves writing programs to simulate digital circuits in order to verify correctness before building the circuit.

▶ Experiments on practical aspects will augment the theory course. It involves wiring up the circuit on a breadboard and testing using instruments like multimeters and oscilloscopes.

# General Instructions

- ▶ Divided into groups of two. Initial group assignment done by Roll numbers and put up on Moodle.
- ▶ You are allowed one round of swapping. Please inform the TA.
- ▶ There will be one TA for every six groups. You will have the same TA for all experiments.
- ▶ You have to sit in the same Table throughout the semester. Check on Moodle to see which is the room and table assigned to you.
- ▶ Lab instructions for a particular experiment will be given the previous week on Monday 2-3pm in CRC 101
- ▶ Keep a lab notebook where you record all observations and write conclusions.

## General Instructions

- ▶ Start the experiment on Monday 3pm and try to finish by Tuesday 5pm. You will be given marks for the experiment on Tuesday.

- ▶ If you need an extension, inform the TA on tuesday evening and show the finished experiment the subsequent Monday immediately after the lecture.

- ▶ Expectation is you have 100% attendance. If you bunk even one of the days you will not get any marks for that experiment.

- ▶ There is one makeup session for those fall ill and have a medical certificate from the Institute hospital