

LABORATORY 2 v1

CIRCUIT SIMULATION WITH MULTISIM

Practical circuit design occurs in three stages:

1. Design of an appropriate circuit diagram and calculation of all component values to meet the specifications.
2. Verification of the design with circuit simulation.
3. Building and testing the circuit in the laboratory.

The building phase usually takes considerable time and resources. Even in EE100, tracking down design errors in the laboratory can take hours. The turn-around time for fabricating and stuffing printed circuit boards is days to weeks, and fabricating custom integrated circuit takes several months, not to speak of the high cost.

Circuit simulation allows verifying circuit performance before committing to fabrication. Errors found at this stage are much less time consuming and costly to fix. Although most circuits designed in the EE100 laboratory are relatively simple and could perhaps be successfully designed without simulation, every experienced engineer can tell you about disasters where a circuit that was supposedly too simple to simulate did not work properly malfunctioned and held up a larger project. Many successful electronics companies have policies allowing circuits to be built only after they have been successfully simulated. We use the same philosophy in EE100 and recommend it for your own circuit projects.

In EE100 we are using a simulator called MultiSim to verify our circuits. Before reading on, **DOWNLOAD** the MultiSim tutorial from the EE100 website and follow it through **Section 6**. Studying the additional material is optional.