

# GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 1

**Electrical Engineering**

**Subject Name** : Simulation Laboratory

## SIMULATION LABORATORY

This laboratory should have equal weightage of MATLAB and LabVIEW based simulations. Students should be able to work on both these tools effectively so that s/he can use it for possible project work in second year.

A. MATLAB based simulation experiments :

1. Introduction to basics of MATLAB programming.
2. Introduction to various tool boxes like control system, optimization tool box etc.
3. Introduction to Simulink and various blocksets.
4. Plotting response of first order circuits and second order circuits with the help of MATLAB programming.
5. Solution of set of linear equations by programming.
6. Solution of set of non-linear equations by programming of N-R method.
7. Simulation of first order circuits and second order circuits using Simulink (Use of different ode solvers and different time step etc may be elaborated).
8. Analysis of three phase bridge rectifier circuits with different type of R-L-E load in Simulink.
9. Analysis of performance of 400 kV long transmission line with the help of Simulink with suitable voltage sources at both ends.
10. Design of speed control system of D.C shunt motor with suitable load.
11. Simulation of control system represented in state space form.

The student should be able to utilize the potential of MATLAB as simulation and design tool.