**List of Experiments**

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| **S. No.** | **Title** |
| 1 | Analog (op amp based) simulation of linear differential equation |
| 2 | Numerical Simulation of given nonlinear differential equations |
| 3 | Real time simulation of differential equations |
| 4 | Mathematical modelling and simulation of physical systems in at least two fields.  Mechanical  Electrical  Chemical process |
| 5 | System Identification through process reaction curve. |
| 6 | Stability analysis using Pole zero maps and Routh Hurwitz Criterion in simulation platform. |
| 7 | Root Locus based analysis in simulation platform |
| 8 | Determination of transfer function of a physical system using frequency response and Bode’s asymptotes |
| 9 | Design of Lag, lead compensators and evaluation of closed loop performance. |
| 10 | Design of PID controllers and evaluation of closed loop performance. |
| 11 | Discretization of continuous system and effect of sampling |
| 12 | Test of controllability and observability in continuous and discrete domain in simulation platform |
| 13 | State feedback and state observer design and evaluation of closed loop performance |
| 14 | Mini Project1: Simulation of complete closed loop control system including sensor and actuator dynamics |
| 15 | Mini Project 2: Demonstration of closed loop system in hardware. |