

Course Title: Power and Control Laboratory Work

Course Code: PCEG 308

Credit Hours: 1

Course Description:

This course intends to reinforce the concepts learned in theory classes of control engineering and power electronics that have a strong practical applications emphasis, by a series of relevant experiments carried out in the laboratory. The exact courses covered by laboratory work may vary.

Course Contents:

A series of experiments to reinforce the subject matter taught in 'COEG301: Control Engineering', and 'EEEG318: Power Electronics'.

The following laboratory exercise can be done for Control Engineering:

1. To study the time domain response of first order and second order system using MATLAB
2. Use of MATLAB for pole and zero and root locus plot
3. Use of MATLAB simulink for time domain response of first and second order systems
To study frequency response of first order and second order system using MATLAB
4. Bode plot, polar plot, Nyquist plot using MATLAB
5. Design of PID controller using MATLAB

The following laboratory exercise can be done for Power Electronics:

1. To study the triggering circuit of the thyristor
2. To study the half bridge controlled rectifier.
3. To study the full bridge half controlled rectifier.
4. To study the triggering circuit for 1-phase AC voltage control using TRIAC
5. To study the 1-phase AC voltage control using TRIAC.
6. To observe the light intensity control using TRIAC phase control method
7. To study the single phase PWM converter
8. Simulation of converters, inverters, choppers using MATLAB