Department of Electrical and Control Eng.

Lab 142

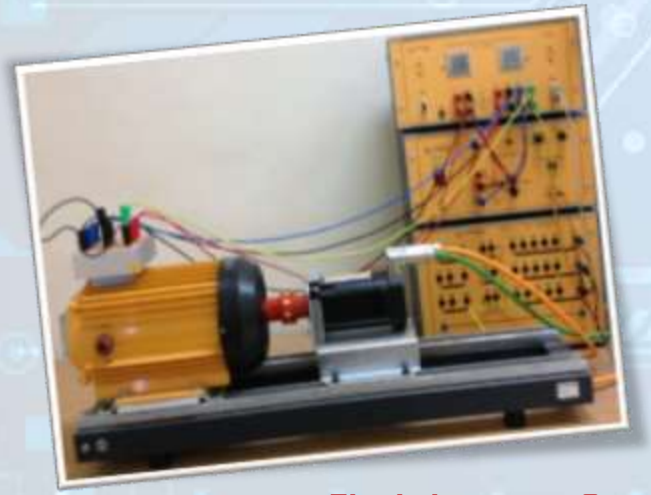
Power System and Protection

Capacity: 20 Students

The laboratory enables students to demonstrate the principle of power transmission using a model transmission line, electric loads connection such as inductive loads, capacitor banks and resistors to preview their effect on a power system. In addition this laboratory is equipped with facilities that cover all power system protection related topics and achieve experimental verification of principles and practice of protective relaying.

LABORATORY EQUIPMENTS

- 2× Inductive Load.
- 2× Resistive Load.
- 2× Capacitive Load.
- 2× Transmission Line Model.
- Transmission Line Model- medium.
- Power Factor Meter.
- Reactive Power Controller.
- Differential Transformer Relay.
- 2× Feeder Management Relay.
- Distantiometer (Distance Relay Protection)
- Three- Phase Power Meter.
- Brushless Servo Motor.
- Three- Phase Synchronous generator.
- Electrical Power Digital Measurement Unit.
- AC Machine Excitation Controller.
- LCD SCADA Monitor (Lenovo).
- Brushless controller with motor.
- Three-phase transformer.
- Switchable capacitor battery.
- RS485 communication Module.
- Synchronization indicator.
- Synchronization indicator.
- Double busbar with two, four disconnectors.



MAJOR EXPERIMENTS

Power System Experiments

- ✓ No-Load / Matched load performances
- ✓ Measurement of Ohmic Inductive load investigation of a transmission line.
- ✓ Measurement of Ohmic Capacitive load investigation of a transmission line.
- ✓ Measurement of current and voltage ratios during three phase short circuits.
- ✓ Measurement of current and voltage ratios during Asymmetrical short circuits.
- ✓ Measurement of a zero sequence impedance.

Power system Protection Experiments

- ✓ Distance Protection.
- ✓ Differential protection for (Generator/Transformer)
- ✓ Over current/Voltage/Frequency Protection.
- ✓ Under Voltage/Frequency Protection.

The Laboratory Serves the Following Courses

Course No.	Course Title	Semester
EE341	Introduction to Power	5
EE441	Power System 2	7
EE449T	Electrical Power	8
EE442	Power System Protection 1	8