Electrical Engineering Laboratory

(Location: High Voltage Building, ground floor)

1- Lab Photos

Photo 1

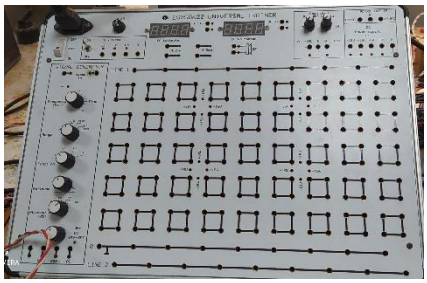
Photo 2

2- Lab Description

The electrical Engineering lab is used to teach the practical part of the courses of Electrical Engineering and Electronics for students of the first level of the Electrical Power Engineering and Machines Program. It is also used in teaching the laboratory part of electrical machines courses for students of the other programs.

3- Lab Equipment

The following is a table of equipment and devices that are used in the experiments.

 **Oscilloscope** **Model : HM 303** **30 MHZ**	 **Digital storage oscilloscope** **Bandwidth : 25 MHz** **Sample rate : 250 MS/s** **Mains voltage input : 100 - 240 V AC** **Mains frequency : 50/60 Hz** **Model : UTD 2025 CL**
 **Function generator** **Model : FG 600** Frequency 0.01Hz- 100kHz	 **Analog/Digital plug component application experiment set** **Model: ES05GK20**
 **Electrical components**	

4- Lab Experiments

First year:

Course: Electrical Engineering **Code: ELE111**

1- **Exp-1: Resistance- Ohm's law and Potentiometer. 1- The relation between the voltage V, the current I and the resistance R. 2- Series and parallel resistance. 3- The operation of the potentiometer.**
2- **Exp-2: Superposition and Reciprocity theorems and power matching. 1- Superposition and Reciprocity theorems.**
3- **Exp-3: Superposition and Reciprocity theorems and power matching. 2- Investigate the conditions required for maximum power transfer from a source to load.**
4- **Exp-4: Alternating current networks, Purely resistive, purely inductive and purely capacitive circuits. 1- Determination of the impedance in case of single resistance, single inductance and single capacitance as a load. 2- Evaluation of the effect of the frequency in each single case.**
5- **Exp-5: Alternating current networks, Circuits with resistance, inductance and capacitance.**
6- **Exp-6: Series and parallel resonant circuits. 1- The resonance conditions detection. 2- Measure the resonance frequencies, the pass-bands and the quality factors.**
7- **Exp-7: Study of transient condition of a circuit with resistance and capacitance.**

Course: Electronics **Code: ELE121**

1- **Exp-1: Semiconductor diode characteristics and its applications. 1- Diode testing and its V-I characteristics. 2- Half wave and full wave rectifiers.**
2- **Exp-2: Filtering cells for a power supply unit. 1- The effect of a filtering cell on a rectified voltage. 2- Analyzing the features of a capacitive filter on half wave and full wave.**
3- **Exp-3: Diode applications. 1- Diode circuits and voltage doublers. 2- Clamping and clipping circuits.**
4- **Exp-4: Zener diode characteristics and its use in stabilizing circuit.**
5- **Exp-5: Transistor circuits. 1- Transistor testing. 2- Transistor characteristic curve.**
6- **Exp-6: Transistor applications: 1- Common emitter transistor amplifier.**
7- **Exp-7: Transistor applications: 2- Common collector and common base transistor amplifier.**

Second year:

Course: None **Code: None**

Third year:

Course: None **Code: None**

Fourth year:

Course: None **Code: None**

5- Lab Maintenance

The laboratory is evaluated to determine the experiments and their readiness to participate in the teaching process and to determine the required maintenance periodically, and the capabilities and problems of the laboratory are periodically reported after each experiment.