

SEMESTER <i>Fourth</i>	DEPARTMENT <i>General Engineering</i>	COURSE TITLE <i>Electrical Measurements Lab</i>
COURSE CODE <i>EP410</i>	HOURS: 3 UNITS: 1	COURSE SPECIFICATIONS <i>Practical Contents</i>
1. Get Familiar with the Laboratory Equipments, Measures of Safety, and Principle of Writing Experiment Report: <ul style="list-style-type: none"> ➤ Be familiar with laboratory equipment and safety measures. ➤ Understand how to write experiment report. 		
2. To Determine Probability and Error Analysis in Measuring Systems: Experiment determining error analyzing for a known resistor, using: <ul style="list-style-type: none"> ➤ Ammeter-voltmeter measurement. ➤ Ohmmeter ➤ Wheatstone-Bridge. 		
3. Learn the Principle of the Analogue AVO-Meters, and Load Effect: <ul style="list-style-type: none"> ➤ Be Familiar with Different types of analogue, electronic Analogue multi-meters. ➤ Make measurements on all ranges and all quantities ➤ Dismantle a D'arsonval meter to have a close look to its parts. ➤ Evaluate the load effect on the circuit and determine limits of loading. 		
4. Know How to Measure the Power and Power Factor, KW-Hour Meter: <ul style="list-style-type: none"> ➤ The student should understand the operations of the instruments in circuits ➤ Recognize different types of frequency meters. ➤ How to measure the frequency. ➤ Pulse measurements. ➤ Measurements of Transients. 		
5. Using Bridge Instruments for Measuring: <ul style="list-style-type: none"> ➤ Impedance, inductance, storage factor, capacitance, dissipation factor and power factor. 		

6. Learn How to Operate the Oscilloscope as a Voltage Measuring Instrument:

- Set up of the beam focus, intensity, and astigmatism.
- Beam positions and how to set them.
- Appreciate different sections of the scope.
- Beam section.
- Vertical response section.
- Horizontal response section.
- Time base & Triggering section.
- XY scales setting.
- Amplitude measurements; Peak, PP, RMS calculation.
- Explain how to set Trigger functions and synchronization.
- Use of the scope as a voltage measuring instrument.

References:

- 1- Olevier & Cage, McGraw Hill, 1973. *Electronic measurement and Instrumentation*
- 2 *Elements of Electrical & Electronic Instrumentation*. Kurt S., McGraw Hill, 1976.
- 3- *A Course in Electrical Measurement Instrumentation*, A.K. Sawhany.

القياسات الكهربائية و أجهزتها

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