



# Engineering Program

<b>Specialization</b>	<b>Engines Systems</b>
<b>Course Number</b>	<b>20309222</b>
<b>Course Title</b>	<b>Power Systems Measurements Lab</b>
<b>Credit Hours</b>	<b>1</b>
<b>Theoretical Hours</b>	<b>0</b>
<b>Practical Hours</b>	<b>3</b>



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

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**Brief Course Description:**

Experimental application on different types of power systems measuring instruments and recording instruments.

**Course Objectives:**

Upon the completion of this course, the student will be able to:

- 1) Know the construction , connection , and method of operation of different types of energy measuring and recording instruments methods: watt-meter, watt-hour meter, power factor meter, frequency meter.
- 2) Know methods of calculation the different electrical quantities such as active power, reactive power, appearance power, energy, power factor.



## Detailed Course Outline:

Unit Number	Unit Title	Unit Content	Time Needed
1.	Introduction	<ul style="list-style-type: none"> <li>▪ Types of watt-meters, electrical ckt's, and their connection.</li> <li>▪ Siting and adjusting of watt-meters.</li> <li>▪ Power measurement in DC &amp; AC circuits.</li> <li>▪ Single phase for different loads( Resistance , inductance , capacitance , and complex ) power measurement in AC three phase system including different loads ( Resistance , inductance , capacitance , and complex ) by using: <ul style="list-style-type: none"> <li>▪ One watt-meter.</li> <li>▪ Two watt-meter.</li> <li>▪ Three watt-meter.</li> <li>▪ Comparison results between different methods measurement in three phase system.</li> </ul> </li> </ul>	
2.	Energy measurement	<ul style="list-style-type: none"> <li>▪ Construction connection , maintenance of electrical energy instrument in single phase and in three phase circuit sitting and adjusting.</li> <li>▪ Direct and indirect methods measurement in single phase and three phase CKT.</li> </ul>	
3.	Power factor	<ul style="list-style-type: none"> <li>▪ Construction, connection of different types power factor instrument.</li> <li>▪ Power factor measurement in AC single phase CKT's.</li> <li>▪ Power factor measurement in AC three phase CKT's.</li> <li>▪ Power factor measurement by using phase angle instrument.</li> </ul>	

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4.	<b>Frequency Measurement</b>	<ul style="list-style-type: none"> <li>▪ Calculation the power factor by using indirect method.</li> <li>▪ Types of frequency meters.</li> <li>▪ Construction , connection CKT's.</li> <li>▪ Frequency measurement single phase AC CKT's.</li> <li>▪ Frequency measurement three phase AC CKT's.</li> </ul>	
5.	<b>Reactive Power Measurement</b>	<ul style="list-style-type: none"> <li>▪ The connection of active power instrument and power factor instrument in single phase CKT's including different loads and calculate the reactive power.</li> <li>▪ The connection of active power instrument and power factor instrument in three phase CKT's including different loads and calculate the reactive power.</li> </ul>	

**Evaluation Strategies:**

Exams		Percentage	Date
Exams	First Exam	40%	
	Second Exam	20%	
	Final Exam	40%	
Homework and Projects Discussions and lecture Presentations			

**Teaching Methodology:**



**Text Book**

**References**



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