



# Engineering Program

<b>Specialization</b>	<b>Electrical Power System</b>
<b>Course Number</b>	<b>20304221</b>
<b>Course Title</b>	<b>Electrical Power Plants</b>
<b>Credit Hours</b>	<b>3</b>
<b>Theoretical Hours</b>	<b>3</b>
<b>Practical Hours</b>	<b>0</b>



**Brief Course Description:**

- ❖ This Course focuses on; construction & operation of ; steam power stations, hydraulic power station ,gaseous power stations , diesel power station & renewable power stations .

**Course Objectives:**

The student should be able to;

1. Explain the generation of electrical energy.
2. Describe construction & operation of steam power plants.
3. Describe construction & operation of gaseous power plants.
4. Describe construction & operation of diesel power plants.
5. Describe construction & operation of renewable power plants.



## □ Detailed Course Description:

Unit Number	Unit name	Unit Content	Time Needed
1.	<b>Introduction</b>	<ul style="list-style-type: none"> <li>▪ Generation of electrical energy</li> <li>▪ Types of power plants.</li> <li>▪ Capacity of power plant.</li> </ul>	
2.	<b>Stream power plants</b>	<ul style="list-style-type: none"> <li>▪ Steam generators (boilers); Types &amp; Auxiliaries</li> <li>▪ Evaporators</li> <li>▪ Feed water &amp; water heaters.</li> <li>▪ Condensers; type &amp; operation.</li> <li>▪ Super heaters and reheaters</li> <li>▪ Auxiliary devices; pumps, cooling towers fuel feeders.</li> <li>▪ Steam turbine</li> <li>▪ General plan of steam plants.</li> </ul>	
3	<b>Gaseous power plants</b>	<ul style="list-style-type: none"> <li>▪ Applications of gaseous power plants.</li> <li>▪ Advantages &amp; disadvantages of gaseous plants.</li> <li>▪ Elements of gaseous turbine; gas turbine, compressor, combustor, open cycle &amp; closed cycle.</li> <li>▪ Auxiliary parts, lubrication &amp; cooling</li> </ul>	
4	<b>Diesel power plants</b>	<ul style="list-style-type: none"> <li>▪ Advantages &amp; disadvantages of diesel engine</li> <li>▪ Applications, construction &amp; principle of operation</li> <li>▪ Fuel system, cooling system, lubrication system, general plan of diesel engine</li> </ul>	

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



5	<b>Hydraulic power plants</b>	<ul style="list-style-type: none"> <li>▪ Classification of hydraulic power plants.</li> <li>▪ Advantages &amp; disadvantages &amp; applications.</li> <li>▪ Water head, water tank &amp; dams</li> <li>▪ Construction &amp; principle of operation</li> </ul>	
6	<b>Renewable power plants</b>	<ul style="list-style-type: none"> <li>▪ Geothermal plants; construction &amp; applications</li> <li>▪ Solar plants; construction &amp; applications</li> <li>▪ Wind plants</li> <li>▪ Advantages &amp; disadvantages</li> </ul>	
7	<b>Economical constructions of energy generation.</b>	<ul style="list-style-type: none"> <li>▪ production costs ; fixed costs , year costs ,</li> <li>▪ Total price of energy.</li> <li>▪ Load curves &amp; continuous load curves.</li> <li>▪ Peak demand, utilization factor, diversity factor &amp; peak diversity factor.</li> </ul>	



□ **Evaluation Strategies:**

		Percentage	Date
1. Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Assignments	10%	
	Final Exam	50%	--/--/----

□ **Teaching Methodology:**

1. Lecture

□ **Textbook:**

Power Generation Technology; Paul Breeze , 2005 ISBN 0-7506 – 6313-8

□ **References:**

1. Wind power; renewable Energy for home, farm & Business; Paul Gipe, 2004 .
2. Renewable Energy ; Bent Sorensen , 2004  
ISBN 0-12-656153 -2