



## Course Weekly Outline

<b>Course Instructor</b>	Dr. Naseer Abboodi Madloul				
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<b>Title</b>	Power Plant Engineering.				
<b>Course Coordinator</b>	Risan Faris				
<b>Course Objective</b>	The objective of this course is to study the stationary power plants which produce the mechanical energy and then electrical energy.				
<b>Course Description</b>	In this course we study the variable load problem, the power cycles and main components of two types of plant, steam power plants and gas turbine power plants in details. In addition, we have short study of another three types of plant, nuclear, hydroelectric, and wind turbine power plants.				
<b>Textbook</b>	Rai D. G., An Introduction To Power Plant Technology, 2 <sup>nd</sup> edition, Khanna Publishers.				
<b>References</b>	1-Frederick T. Morse, Power Plant Engineering, Third edition, East west press. 2-Eastop T. D. and McConkey A., Applied Thermodynamics for Engineering Technologists, Third Edition, Longman House.				
<b>Course Assessments</b>	Term Tests	Laboratory	Quizzes	Project	Final Exam
	30%	10%	10%	----	50%
<b>General Notes</b>					



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Week	Date	Topics Covered	Lab. Experiment Assignments	Notes
1	30/9/2014	The variable load problem(ideal and actual load curve, terms and factor and elements of an electric power system)	Preparation procedure of two shaft gas turbine model (T102).	
2	7/10/2014			
3	14/10/2014	Gas turbine power plants(Brayton cycle or basic power cycle, practical gas turbine cycle, modifications to the basic cycle, intercooling, reheat, heat exchanger, centrifugal and axial air compressors, combustion system and combustion chambers, efficiency)	Measurements the fuel (propane) and air flow rates of the gas turbine.	
4	21/10/2014			
5	28/10/2014			
6	4/11/2014			
7	11/11/2014	Steam power plant( important steam definitions, ideal Rankine cycle, deviation of actual cycle from ideal cycle, performance parameters definitions, Rankine with superheat, Rankine with reheat, the regenerative cycle, feed water heaters, open feed water heaters, closed feed water heaters, combined gas- vapor cycles and the total energy concept, cogeneration, the binary vapor cycle)	Measurement the temperatures and pressures after and before main component of the gas turbine.	
8	18/11/2014			
9	25/11/2014			
10	2/12/2014			
11	9/12/2014			
12	16/12/2014			
13	23/12/2014	Steam generators( shell boiler, fire- tube boiler, water- tube boiler, classifications, straight tube unit, bent tube unit, circulation in boiler, natural circulation, forced circulation, economizer, pre- heater, feed water treatment, boiler calculation, heat balance of the boiler)	Determination the performance parameters of two shaft gas turbine.	
14	30/12/2014			
15	6/1/2012			
		Half Year Breake up to 15/2/2012		
16	17/2/2015	Steam turbines(classification, impulse turbines, simple impulse, compounded impulse, Rateau turbine, Curtis turbine, turbine blade height,	In laboratory scale, steam power plant station is to be built in Mech. Dept. power plant laboratory.	
17	24/2/2015			
18	3/3/2015			
19	10/3/2015	impulse- reaction turbine, stage efficiency, overall efficiency, reheat factor, turbine governing)		
20	17/3/2015			
21	24/3/2015			
22	31/3/2015			
23	7/4/2015	Cooling tower systems( classification, atmospheric cooling tower, natural draft, forced draft, induced draft)		
24	14/4/2015	Nuclear power plant( principle of nuclear fission, nuclear cycles, classification of nuclear reactors, boiling water reactor BWR, pressurized water reactor PWR)		
25	21/4/2015			
26	28/4/2015			
27	5/5/2015			
28	12/5/2015	Hydro- electric power plant.		
29	29/5/2015	Wind turbine plant and solar plant.		
30	26/5/2015			

Lecturer Signature:

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