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Course Instructor	Layth Abed Hasnawi				
E-mail	Leath_tech2014@yahoo.com				
Title	TURBOMACHINERY				
Course Coordinator	Annually				
Course Objective	<ul style="list-style-type: none"> ❖ Basic Operation of Turbomachinery ❖ Classification of Turbomachinery (Compressor ,Pumps and Turbine) ❖ Study the problems affecting the work Turbomachinery ❖ Blade Types ❖ Axial Flow Compressors & Efficiency ❖ Configuration ❖ Centrifugal Compressor Performance Curve ❖ Velocity Triangles ❖ Turbine & Efficiency ❖ Pelton turbine or Impluse turbine ❖ Pump @ Centrifugal Pumps 				
Course Description	Theoretical: 2 hrs. Experimental: 1hrs.				
Textbook	Fluid Mechanics and Thermodynamics of Turbomachinery FOURTH EDITION in SI/METRIC UNIT S.L. Dixon, B.Eng., PH.D				
Course Assessments	Term Tests	Laboratory	Quizzes	Project	Final Exam
	20%	----	6%	4%	60%
General Notes	Laboratories Mark (calculated degree within the laboratory material III)				

Course Weekly Outline

Week	Date	Topes Covered	Lab. Experiment Assignments	Notes
1		<u>Introduction to Turbo machine</u> ❖ General Concepts of Turbomachine ❖ Classification of TURBOMACHINES ❖ Types of turbines ❖ Types of Compressors		
2		<u>Blade Theory</u> ❖ Introduction ❖ Forces between the blade row and the fluid. ❖ Blade terminology		
3		<u>Axial flow Compressors</u> ❖ Introduction ❖ Stages of Axil flow Compressors ❖ Energy Increase ❖ Remember some previous laws		
4		<u>Velocity Triangles of Axial flow Compressors</u> ❖ Effect of Reaction ratio(R) on the velocity triangles. ❖ Static pressure rise ❖ Stage efficiency ❖ Pressure coefficient		
5		<u>Tutorial (1)</u> ❖ Solved Problems ❖ Quizzes		
6		<u>Energy Transfer in Terms of lift & Drag coefficients</u> ❖ Drag coefficients ❖ lift coefficients ❖ Annulus drag coefficients ❖ Total drag coefficient	<i>Experiment No 1</i> Study of flow through cascades compressors	

7		<u>Axial Flow Steam And Gas Turbines</u> ❖ Introduction ❖ Description ❖ Velocity Triangles for An Axial FLOW TURBEN		
8		<u>Tutorial (2)</u> ❖ Solved Problems		
9		<u>Axial Flow Steam And Gas Turbines</u> ❖ Blade types ❖ Two stage Pressure Compounded impulse Turbine		
11		<u>Axial Flow Steam And Gas Turbines</u> ❖ Velocity Triangles of the Two Stage Impulse Turbine		
11		<u>Tutorial (3)</u> ❖ Solved Problems		
12		<u>Pelton turbine or Impluse turbine</u> ❖ Introduction ❖ Parts of the Pelton turbine ❖ Nozzle and flow control		
13		<u>Hydraulic Turbines</u> ❖ Introduction ❖ Classification of Hydraulic Turbines		
14		<u>Pelton turbine or Impluse turbine</u> ❖ Force, Power and efficiency ❖ Velocity triangles Turbine efficiency		
15		<u>Tutorial (4)</u> ❖ Solved Problems		
16		Review		
Half – year break				
17		<u>Centrifugal Pumps</u> ❖ Introduction		
18		<u>Centrifugal Pumps</u> ❖ Pump Losses and Efficiencies	Study of centrifugal blower with Airfoil type vanes	
19		<u>Tutorial (5)</u> ❖ Solved Problems ❖ Quizzes		
21		<u>Centrifugal Pumps , Fans and Compressors</u> ❖ Introduction ❖ Some definitions ❖ Theoretical analysis of a centrifugal Compressor		

21		<u>Centrifugal Pumps , Fans and Compressors</u> ❖ Diffuser ❖ Inlet velocity limitations ❖ Optimum design of a pump inlet		
22		<u>Centrifugal Pumps , Fans and Compressors</u> ❖ Optimum design of a centrifugal compressor inlet		
23		<u>Centrifugal Pumps , Fans and Compressors</u> ❖ Slip factor ❖ Head increase of centrifugal pump ❖ Performance of centrifugal compressors		
24		<u>Tutorial (6)</u> ❖ Solved Problems ❖ Quizzes		
25		<u>Axial Pumps</u> ❖ Introduction ❖ Open axial-flow fans		
26		<u>Axial Pumps</u> ❖ Calculation of twist in an Airplane Propeller		
27		<u>Axial Pumps</u> ❖ Multistage axial-flow pump		
28		<u>Axial Pumps</u> ❖ Design of a Vane-Axial Flow Fan for a Wind Tunnel		
29		<u>Axial Pumps</u> The Effects of Doubling Pump Speed	Study of flow through axial compressors	
31		<u>Axial Pumps</u> Design of a New Geometrically Similar Pump		
		<u>Tutorial (7)</u> ❖ Solved Problems Quizzes		

INSTRUCTOR Signature:

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