

Course Description Form

1. Course Name:					
Power Plants					
2. Course Code:					
MPAC402					
3. Semester / Year:					
Annual System (2025-2026)					
4. Description Preparation Date:					
The beginning of the academic calendar for the year (2025-2026)					
5. Available Attendance Forms:					
3 hours/week - "theoretical + Practical"					
6. Number of Credit Hours (Total) / Number of Units (Total)					
(60 theoretical hours + 30 practical hours) 90 hours / 5 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Raoof Mohammed Radhi Email: raof@uowa.edu.iq & raof@g.uowa.edu.iq					
8. Course Objectives					
Teaching the student, the steam properties, thermal processes types of boilers fuels and combustion the turbines which needed in air conditioning					
9. Teaching and Learning Strategies					
Strategy		Data show lecture with discussion to ensure understanding Video clip during lectures for respective clarification Strong emphasis on scientific visits to related sites Example solving with students participation Tutorial sheet solution as Home work Frequent quizzes to motivate student Lab exam Encourage student to attend seminars & discussion work-shops Students seminars Serious attention for class attendance to reduce "% absences"			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1 - 4	8-8	Student Understanding The lecture	Plant Steam Cycles, M Cycles, Reheat Cy Regenerative Cycle, C Feed Water Heater, Cl Feed Water Heater, Comb Cycles, Binary Cycle Worl on Mercury and Ste Combined Condenser.	Theoretical And practical	Weekly Quiz and Lab report
6-5	4-4	Student Understanding The lecture	Introduction to H Exchangers, Theore Principles, Parallel Flow H Counter Flow H.E, Cross F H.E, The Log M Temperature Differ Method, The NTU Met Shell and Tubes H Condensing, Evaporation.	Theoretical And practical	Weekly Quiz and Lab report
7-11	10-10	Student Understanding The lecture	Steam Boilers, Kinds, Burr Air Preheated, Preheated Superheated, Combustion Fuels, Complete Incomplete Combust Correct Air/Fuel Ratio, Ac Air Supplied, Heat Generat Boiler Efficiency, p principle.	Theoretical And practical	Weekly Quiz and Lab report
12-14	6-6	Student Understanding The lecture	Steam Condensers, Ki Direct Contact Condens Surface Condenser, Design Manufacturing, Efficiency the Condensers.	Theoretical And practical	Weekly Quiz and Lab report
15-16	4-4	Student Understanding The lecture	Steam Nozzles, Applicati Steam Expansion, Discha Velocity of Steam Thro Nozzles, Values of Cri Pressure, Diameters of Th and Exit for Maximum	Theoretical And practical	Weekly Quiz and Lab report
17-18	4-4	Student Understanding The lecture	Turbo-Machinery, Classification, Princ Theory, Dimension Numbers.	Theoretical And practical	Weekly Quiz and Lab report
19-22	8-8	Student Understanding The lecture	The Pumps, Kinds of Pur System Characteristics, Pur Characteristics, Match Pumps to Sys Characteristics, Operation Pumps in series and Para Centrifugal pumps, Hydraulic Characteris Cavitation	Theoretical And practical	Weekly Quiz and Lab report
23-28	12-12	Student Understanding The lecture	Steam Turbines, The Ki Impulse Turbine, Bla Efficiency, Reaction Turb Reaction Ratio, Installat Multi Stage Blades Velocity Triangles, Blades Guidance, The Blades ,External Guidance,	Theoretical And practical	Weekly Quiz and Lab report
29-30	4-4	Student	Power Plants Systems, Feed	Theoretical	Weekly

		Understanding The lecture	Water Cycle, Water Treatment and Testing, Piping Systems, Valves, Globe Valve, Check Valve, Chick Valve, Special Valves, Safety Valves, Control Systems, Blowdown, Measurement instruments, Goal of Measurement, Classifications, Temperature Measurements, Pressure Measurements, Discharge Measurements, Gas Analysis, Velocity Measurements, Level Recorder, Electrical Measurements	And practical	Quiz and Lab report
11. Course Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc					
12. Learning and Teaching Resources					
Required textbooks (curricular books, if any)			A Textbook of Thermal Engineering" . by R.S. KHURMY and J.K. GUPTA		
Main references (sources)			Engineering an Thermodynamics" Approach "fifth edition by YUNUS A.CENGEL		
Recommended books and references (scientific journals, reports...)			Applied Thermodynamics Onkar - Singh 3rd_Edition		
Electronic References, Websites			1- WWW.B-OK.ORG 2- WWW.BOOKFI.ORG		

استاذ المادة: ا.م.د رؤوف محمد راضي
التاريخ: 2025-08-31

رئيس القسم
ا.م.د محمد حسن عبود الموسوي
التاريخ : 2025-08-31

كلية الهندسة