

السيد رئيس قسم هندسة تقنيات التبريد والتكييف

م/ وصف المقررات الدراسية

تحية طيبة....

نرفق لكم ربطاً وصف المقررات الدراسية للمواد الدراسية في القسم للتفضل بالمصادقة عليها.

مع فائق الاحترام والتقدير.....

السيد رئيس اللجنة العليا

تدقيقه، لو هنت .. هت لستدرك

كوليتي
رئيس لستدرك



م.م. ولاء ناصر عباس

مسؤول ضمان الجودة في الكلية

19/3/2024

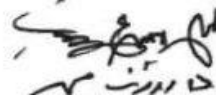
السيد رئيس القسم المحترم

اسم عمليكم

من شأنه الامر في اللجنة العليا

وصلى الاذن من مصادره مؤدع
رئيس المقررات ولجميع المواد

مع الشكر



Course Description Form

1. Course Name:					
Thermodynamics II / second stage					
2. Course Code:					
MPAC203					
3. Semester / Year:					
Annual system / 2023–2024					
4. Description Preparation Date:					
The beginning of the university calendar for the year (2023–2024)					
5. Available Attendance Forms:					
Weekly (theoretical + practical)					
6. Number of Credit Hours (Total) / Number of Units (Total)					
90 theoretical hours + 60 practical hours/8 units					
7. Course administrator's name (mention all, if more than one name)					
Name: Asst. Lect. Mohammed Iyad Ali Email: mohammed.iyad@uowa.edu.iq					
8. Course Objectives					
Course Objectives			Introducing the student to the basics of advanced thermodynamics as a basis for the specializations of refrigeration and air conditioning engineering and power plants.		
9. Teaching and Learning Strategies					
Strategy		1- Lectures and illustrations: Data Show 2- Practical tests using laboratory equipment 3- Multimedia using the e-learning system 4- Giving the lecture, answering students' questions, and discussing with the students aspects that are not clear to them.			
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Student understanding of the lecture	An overview of steam	Daily and weekly testing	Theoretical and practical lecture
2	5	Student understanding of the lecture	dryness fraction measurements	Daily and weekly testing	Theoretical and practical lecture

3	5	Student understanding of the lecture	Steam power plants	Daily and weekly testing	Theoretical and practical lecture
4	5	Student understanding of the lecture	Rankine- reheat cycle	Daily and weekly testing	Theoretical and practical lecture
5	5	Student understanding of the lecture	Regenerative cycle – dual cycle	Daily and weekly testing	Theoretical and practical lecture
6	5	Student understanding of the lecture	High speed gas flow	Daily and weekly testing	Theoretical and practical lecture
7	5	Student understanding of the lecture	Properties of isentropic flows	Daily and weekly testing	Theoretical and practical lecture
8	5	Student understanding of the lecture	Shock waves	Daily and weekly testing	Theoretical and practical lecture
9	5	Student understanding of the lecture	Supersonic nozzles	Daily and weekly testing	Theoretical and practical lecture
10	5	Student understanding of the lecture	Reciprocating compressors	Daily and weekly testing	Theoretical and practical lecture
11	5	Student understanding of the lecture	Dynamic analysis	Daily and weekly testing	Theoretical and practical lecture
12	5	Student understanding of the lecture	Clearance volume	Daily and weekly testing	Theoretical and practical lecture
13	5	Student understanding of the lecture	Multistage compressors	Daily and weekly testing	Theoretical and practical lecture
14	5	Student understanding of the lecture	Gas turbines	Daily and weekly testing	Theoretical and practical lecture
15	5	Student understanding of the lecture	Velocity triangles , frictional effects	Daily and weekly testing	Theoretical and practical lecture
16	5	Student understanding of the lecture	Gas turbines comparison	Daily and weekly testing	Theoretical and practical lecture
17	5	Student understanding of the lecture	Steam turbines. Internal combustion engines	Daily and weekly testing	Theoretical and practical lecture
18	5	Student understanding of the lecture	Thermodynamics relations	Daily and weekly testing	Theoretical and practical lecture
19	5	Student understanding of the lecture	Maxwell relations	Daily and weekly testing	Theoretical and practical lecture

20	5	Student understanding of the lecture	ClausiusClapyron relations	Daily and weekly testing	Theoretical and practical lecture
21	5	Student understanding of the lecture	Thermodynamic relations for du, dh, ds, Cp and Cv	Daily and weekly testing	Theoretical and practical lecture
22	5	Student understanding of the lecture	Real gases	Daily and weekly testing	Theoretical and practical lecture
23	5	Student understanding of the lecture	Compressibility factors	Daily and weekly testing	Theoretical and practical lecture
24	5	Student understanding of the lecture	Real gas equations of states	Daily and weekly testing	Theoretical and practical lecture
25	5	Student understanding of the lecture	Gas mixtures	Daily and weekly testing	Theoretical and practical lecture
26	5	Student understanding of the lecture	Gibbs- equations	Daily and weekly testing	Theoretical and practical lecture
27	5	Student understanding of the lecture	Daltons law and molar ratio	Daily and weekly testing	Theoretical and practical lecture
28	5	Student understanding of the lecture	Volumetric analysis	Daily and weekly testing	Theoretical and practical lecture
29	5	Student understanding of the lecture	Gravimetric analysis	Daily and weekly testing	Theoretical and practical lecture
30	5	Student understanding of the lecture	Combustion, heat of reaction	Daily and weekly testing	Theoretical and practical lecture

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)	Thermodynamics: An Engineering Approach, 5th edition by Yunus A. Çengel and Michael A. Boles
Main references (sources)	Moran, M.J., et al., Fundamentals of engineering thermodynamics. 2018: Wiley.
Recommended books and references (scientific journals, reports...)	Rajput, R. K. Engineering Thermodynamics: A Computer Approach (SI Units Version). Jones & Bartlett Learning, 2010.
Electronic references, Internet sites	https://youtube.com/@mohammedalzubaidy7979?si=GcMp-LCnajh8ZJec