Course Description – Thermodynamics

- 1. Course Name:
- Thermodynamics

2. Course Code:

THER375

- 3. Semester / Year:
- First semester/ Third Class / 2023-2024
- 4. Description Preparation Date:

7/4/2024

- 5. Available Attendance Forms:
 - Presence
- 6. Number of Credit Hours (Total) / Number of Units (Total)
 - Theory (2 hours)- practice (3 hours) (5 hours)/ 3.5 units

7. Course administrator's name (mention all, if more than one name)Name: Firas Salah YahyaEmail: firas.alkhayatt@uomosul.edu.iqShamil Mohammed Saleheng.sh.hassn@uomosul.edu.iq

8. Course Objectives

To study the relationship between heat, work, and the properties of materials, such as gases and vapors, within the boundaries of the thermal system, so that the student will later have a broad understanding of the work of thermal systems, whether thermal systems that produce or consume energy.

- 9. Teaching and Learning Strategies
 - Interactive lecture
 - Brainstorming
 - Dialogue and discussion
 - Practical exercises
 - Self-education

10. Course Structure

We	Hours	Required Learning	Unit or	Learning method	Evaluation		
ek		Outcomes	subject name		method		
1	2 Theory	a1,a2: Remembers and understands the basics of thermodynamics	Basic concepts of thermodynamics	Interactive lecture, brainstorming, dialogue and discussion	Exams,		
	3 practice	a1,a2: Remembers and understands the basics of thermodynamics	Learn about some thermal systems by watching videos	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Exams,		

	2 Theory	a1,a2,a3: Remembers, understands and solves	Pressure and its types	Interactive lecture, brainstorming, dialogue and	Exams, homework
2	3 Practice	examples related to the topic a2,a3: Understands and	Solve problems	discussion Interactive lecture,	Exams,
	5 Flactice	solves problems related to the topic	related to the topic	brainstorming, dialogue and discussion, self-learning	homework
3	2 Theory	a1,a2,a3: Remembers, understands and solves examples related to the topic	Density, specific weight, and temperature and its types	Interactive lecture, brainstorming, dialogue and discussion	Exams, homework
	3 Practice	a2,a3: Understands and solves problems related to the topic	Solve problems related to the topic	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Exams, homework
4	2 Theory	a1,a2: Remembers, understands the topic	Zeroth law of thermodynamics, reversibility and pure substance	Interactive lecture, brainstorming, dialogue and discussion	Exams,
	3 Practice	a2,a3: Understands and solves problems related to the previous topic	Solve problems related to the previous topic	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Exams, homework
5	2 Theory	a1,a2,a3: Remembers, understands and solves examples related to the topic	Energy and its types	Interactive lecture, brainstorming, dialogue and discussion	Exams, homework
5	3 Practice	a2,a3: Understands and solves problems related to the topic	Solve problems related to the topic	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Exams, homework
ć	2 Theory	a1,a2,a3: Remembers, understands and solves examples related to the topic	Perfect gas laws	Interactive lecture, brainstorming, dialogue and discussion	Exams, homework
6	3 Practice	a2,a3: Understands and solves problems related to the topic	Solve problems related to the topic	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Exams, homework
7	2 Theory	a1,a2,a3: Remembers, understands and solves examples related to the topic	Perfect gas laws	Interactive lecture, brainstorming, dialogue and discussion	Exams, homework
7	3 Practice	a2,a3: Understands and solves problems related to the topic	Solve problems related to the topic	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Exams, homework
8	2 Theory	a1,a2,a3: Remembers, understands and solves examples related to the topic	First law of thermodynamics and it application on closed and open systems	Interactive lecture, brainstorming, dialogue and discussion	Exams, homework
	3 Practice	a2,a3: Understands and solves problems related to the topic	Solve problems related to the topic	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Exams, homework
9	2 Theory	a1,a2,a3: Remembers, understands and solves examples related to the topic	First law of thermodynamics and it application on closed and open systems	Interactive lecture, brainstorming, dialogue and discussion	Exams, homework
	3 Practice	a2,a3: Understands and solves problems related to the topic	Solve problems related to the topic	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Exams, homework
10	2 Theory	a1,a2,a3: Remembers, understands and solves examples related to the topic	Reversible processes of thermodynamics for closed systems	Interactive lecture, brainstorming, dialogue and discussion	Exams, homework
	3 Practice	a2,a3: Understands and solves problems related to the topic	Solve problems related to the topic	Interactive lecture, brainstorming, dialogue and discussion, self-learning	Exams, homework

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	2 Theory	a1,a2,a3: Remembers,		Reversible		Interactive lecture,		Exams,
		understands and solves		processes of		brainstorming, dialogue and		homework
44		examples	s related to the topic		dynamics	discussion		
11	3 Practice	-2 -2. II	nderstands and	for closed systems Solve problems		Interneting leader		Enome
	5 Practice	/				Interactive lecture brainstorming, c		Exams, homework
		solves problems relation the topic		related to the topic		discussion, self-		nomework
	2 Theory		Remembers,	Second	law of	Interactive lectu		Exams,
	2 Theory	understands and solves examples related to the topic		thermodynamics, entropy and thermal processes		brainstorming, dialogue and discussion		homework
12								
	3 Practice	a2,a3: Understands and solves problems related to the topic		Solve problems		Interactive lecture,		Exams,
				related to the topic		brainstorming, dialogue and		homework
						discussion, self-learning		
	2 Theory	2 Theory a1,a2,a3: Remembers, understands and solves		Second law of		Interactive lectu	,	Exams,
					dynamics,	brainstorming, dialogue and		homework
13		examples	s related to the topic	entropy and		discussion		
15	3 Practice	a2 a3· U1	nderstands and	thermal processes Solve problems		Interactive lectu	re	Exams,
	,		oblems related to		to the topic brainstorming, d			homework
		the topic				discussion, self-learning		
	2 Theory			Gas mi	xtures	Interactive lecture,		Exams,
			nds and solves			brainstorming, dialogue and		homework
14		examples related				discussion		
	3 Practice a2,a3: Understands a				oroblems	Interactive lecture,		Exams,
		solves problems related to		related to the topic		brainstorming, dialogue and discussion, self-learning		homework
	2 Theory	the topic a1,a2,a3: Remembers,		Gas mixtures		Interactive lecture,		Exams,
	understands and solves examples related to the topic		Gas mixtures		brainstorming, dialogue and		homework	
4 5						discussion		
15	3 Practice	actice a2,a3: Understands and solves problems related to		Solve problems related to the topic		Interactive lecture,		Exams,
						brainstorming, dialogue and		homework
		the topic				discussion, self-	learning	
11	. Course	e Evalu	ation					
Theo	ory		practice	;	Fi	nal Exam	Total	
250/			1		60%		100%	
25%			15%	6		J%0		
-Exams			- Exams					
-Pres	sence		- Homework					
12	. Learnii	ng and	Teaching Resc	ources				
Reau	lirad tavth	noks (cui	ricular books if a	any)	- Fundam	entals of engi	neering ther	modynamics,
Required textbooks (curricular books, if any) Main references (sources)				ury)	John R. Howell & Richard O. Buckius, 1st ed McGraw-Hill, 1987.			-
					 Thermodynamics: engineering approach, Yunus A. Cengle & Michael A. Boles, 5th ed., McGraw-Hill, 			
				2005.			,	
				- Thermodynamics for engineers, Schaum's outlines,				
				MERLE C. POTTER, Ph,D., 1993.				
	Recommended books and references							
(sria	ntific journ	als, repo	rts)					
ISUG	Jean	, -	/					