Jordan University of Science and Technology

Faculty of Engineering

Mechanical Engineering Department

ME322 Thermodynamics (2) - JNQF Level: 7
Second Semester 2023-2024

Course Catalog
3 Credit Hours. Availability and Irreversibility. Vapor and air-standard power and refrigeration cycles. Thermodynamic relations. Ideal and real mixtures and solutions. Chemical reactions and combustion.
Teaching Method: On Campus

Text Book	
Title	Fundamentals of Classical Thermodynamics
Author(s)	Sonntag, R.E., Borgnake, C. and Van Wylen, G.J.
Edition	6th Edition
Short Name	Ref #1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #2	Fundamentals of Engineering Thermodynamics	Michael J. Moran, Howard N. Shapiro	7th Edition	

Instructor	
Name	**Prof. Osamah Haddad**
Office Location	M5 L3
Office Hours	
Email	haddad@just.edu.jo

Class Schedule & Room

Section 2:
Lecture Time: Mon, Wed : 10:00 - 11:30
Room: M5127

Section 3:
Lecture Time: Mon, Wed : 13:00 - 14:30
Room: M5127

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
253214	ME321 Thermodynamic (1)	Prerequisite / Pass

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	1- Introduction	
Weeks 1, 2, 3	2- Exergy	
Weeks 4, 5	3- Gas power cycles	
Weeks 6, 7	4- Vapor and combined power cycles	
Weeks 8, 9	5- Refrigeration cycles	
Weeks 10, 11	6- Thermodynamic property relations	
Weeks 11, 12, 13	7- Gas mixtures	
Weeks 13, 14	8- Gas-vapor mixtures and air-conditioning	
Weeks 15, 16	9- Chemical reactions	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Perform exergy analysis of Thermodynamic processes. [1SO1] [1L7S1]	15%	
Analyze various gas power cycles. [1SO1] [2L7S1]	25%	
Analyze steam power cycles. [1SO1] [2L7S1]	15%	
Analyze refrigeration cycles. [1SO1] [2L7S1]	15%	
Determine the properties of non-reacting mixtures and use the psychrometric chart to compute properties in air-water vapor mixtures, and to analyze basic air-conditioning processes. [1SO1] [2L7S2]	20%	
Estimate the Stoichiometric air required for combustion and perform energy analysis of combustion processes. [1SO1] [2L7S1]	10%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
100						

Relationship to NQF Outcomes (Out of 100%)	
L7S1	L7S2
80	20

Evaluation	
Assessment Tool	**Weight**
First Exam	30%
Second Exam	30%
Final Exam.	40%

Date Printed: 2024-02-13