



Jordan University of Science and Technology
Faculty of Engineering
Chemical Engineering Department

CHE471 Equipment Design - JNQF Level: 7

Second Semester 2023-2024

Course Catalog

3 Credit Hours. Selection of materials of construction, design of pipes and pumping systems, compressors, tanks, pressure vessels, storage equipment, heat exchangers, and plate and packed towers.

Teaching Method: On Campus

Text Book

Title	Plant Design and Economics for Chemical Engineers
Author(s)	M.S. Peters, K.D. Timmerhaus, and R. E. West
Edition	5th Edition
Short Name	Textbook
Other Information	2002

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #1	Coulson & Richardsons Chemical Engineering, Volume 6, Chemical Engineering Design	R.K. Sinnott	2nd Edition	
Ref #2	Applied Process Design for Chemical and Petrochemical Plants	Ernest E. Ludwig	3rd Edition	

Instructor

Name	Prof. Hasan Hasan
Office Location	-
Office Hours	
Email	akras@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Tue, Thu : 11:30 - 12:30 Room: قاعة الندوات/كيمياوي

Prerequisites		
Line Number	Course Name	Prerequisite Type
224630	CHE463 Separation Processes	Pre./Con.
223121	CHE312 Materials Science And Engineering	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Introduction	From Textbook
Weeks 1, 2	Materials of Construction	From Textbook
Weeks 3, 4, 5, 6	Pipes and Pumps	From Textbook
Week 7	Compressors	From Textbook
Week 8	Tanks, Pressure Vessels and Storage Equipment	From Textbook
Weeks 9, 10, 11, 12	Heat Transfer Equipment	From Textbook
Weeks 13, 14, 15	Mass Transfer Equipment	From Textbook

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Determine the optimum pipe diameter and pump type and power required [50SO2] [1L7S3]	20%	
Determine the power requirement of compressors as well as its type [50SO2] [1L7K1]	10%	
Determine tank thickness, shape and orientation [45SO2] [1L7S2]	10%	
Design 1-2 shell and tube heat exchangers [50SO2] [1L7S2]	20%	
Specify the proper material of construction for industrial equipment. [35SO2] [1L7K1]	10%	
Estimate the cost of equipment covered in the course taking into account time and size effect on the cost. [35SO2] [1L7C2]	10%	
Acquired more engineering sense related to design in general and industrial equipment in specific. [30SO2] [1L7C4]	6%	
Acquire a better understanding of professional and ethical responsibility versus design. [100SO4] [1L7C2]	3%	

Recognize the need for life-long learning. [1SO6] [1L7C2]	3%	
Recognize safety issues' needs. [100SO2] [1L7C1]	5%	
Gain experience in working as part of a team. [100SO5] [1L7C3]	3%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
	91		3	3	3	

Relationship to NQF Outcomes (Out of 100%)						
L7K1	L7S2	L7S3	L7C1	L7C2	L7C3	L7C4
20	30	20	5	16	3	6

Evaluation	
Assessment Tool	Weight
Exam 1	25%
Exam 2	25%
Homework, Quizzes and Projects	10%
Final Exam	40%

Policy	
Attendance	Attendance will be checked at the beginning of class. University regulations will be followed for students exceeding the maximum number of absences.
Homework	Homework problems are assigned during lecture and usually due one week later. Late homework may not be accepted or severely penalized. Try to solve the problems independently. The assigned problems will be collected, graded, and returned to you in the lecture.
Quizzes	Quizzes will be part of this course. No make-up quizzes will be conducted except in the case of a documented emergency.
Student Conduct	It is the responsibility of each student to adhere to the principles of academic integrity. Academic integrity means that a student is honest with him/herself, fellow students, instructors, and the University in matters concerning his or her educational endeavors. Cheating will not be tolerated in this course. University regulations will be pursued and enforced on any cheating student.

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