Jordan University of Science and Technology

Faculty of Engineering

Chemical Engineering Department

CHE436 Chemical Processing Lab - JNQF Level: 7
Second Semester 2023-2024

Course Catalog
1 Credit Hours. Batch reactor, tubular reactor, CSTR, dynamics of stirred tanks in series, residence time distribution, water treatment, flocculation, oil extraction, and phosphoric acid production.
Teaching Method: On Campus

Text Book	
Title	LAB Manual
Author(s)	Khalil Al-Halhuli
Edition	1st Edition
Short Name	LAB Manual
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref # 2	Shreve?s Chemical Process Industries	G. Austin	5th Edition	
Ref # 3	Elements of Chemical Reaction Engineering	H. Scott Fogler	4th Edition	
Ref # 4	Industrial Chemistry	E. Stocchi,	1st Edition	
Ref # 5	Encyclopedia of Chemical Technology	Kirck & Othmer	1st Edition	

Instructor	
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Instructor	
Name	**Mrs. Rowaida Zoumot**
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Class Schedule & Room
Section 1: Lecture Time: Mon : 08:30 - 11:30 Room: LAB Section 2: Lecture Time: Wed : 11:30 - 14:30 Room: LAB Section 5: Lecture Time: Mon : 11:30 - 14:30 Room: LAB

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
224331	CHE433 Chemical Reaction Engineering Ii	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Introduction and group distribution	
Week 2	Oil Leaching	**Oil Leaching Expt.** From **LAB Manual**
Week 3	Production of phosphoric acid	**Production of phosphoric acid** From **LAB Manual**
Week 4	Kinetics of a reaction using a batch reactor	**Kinetics of a reaction using a batch reactor** From **LAB Manual**
Week 5	Steady-state mixed flow reactor (CSTR)	**CSTR Expt** From **LAB Manual**
Week 6	Tubular reactor (plug flow reactor)	**PFR** From **LAB Manual**
Week 7	Dynamics of stirred tanks	**Dynamics of stirred tanks** From **LAB Manual**
Week 8	Water treatment	**Water treatment Experiment** From **LAB Manual**

Week 9	Residence time distribution (RTD)	**RTD experiment** From **LAB Manual**

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Define the role of Chemical Engineering in chemical technology [2SO1, 3SO4, 2SO5] [1L7K1]	7%	
Carry out experiments using different reactors to study reaction kinetics, and to study RTD [2SO1, 2SO2, 1SO4, 2SO6, 1SO7] [1L7S2]	8%	
prepare phosphoric acid from phosphate rocks in the lab and investigate the role and impotance of sulfuric acid and phosphoric acid in the industry [1SO1, 2SO2, 2SO4, 2SO6, 1SO7] [1L7S3]	8%	
Prepare Jojoba oil from Jojoba seeds in the Lab using Soxhlet extraction distillations techniques [1SO1, 2SO4, 2SO6, 1SO7] [1L7S3]	8%	
Apply chemical engineering concepts for analyses of operation of different reactors [3SO1, 3SO2, 1SO3, 1SO4, 2SO5, 4SO6, 2SO7] [1L7K1]	16%	
provide some practice in making engineering judgments, estimates and assessing the reliability of your measurements, skills which are very important for any successful engineer [1SO1, 2SO2, 1SO3, 1SO4, 10SO6, 1SO7] [1L7C2]	16%	
Monitor the operation behavior of different reactors [1SO1, 1SO3, 1SO4, 10SO6, 1SO7] [1L7K1]	14%	
Improve Students' written communication skills through the lab reports. These will also provide students with experience in organizing, analyzing and interpreting engineering data [2SO1, 4SO2, 3SO3, 4SO4, 10SO5] [1L7C3]	23%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
13.33	13	6	15.67	14	30.67	7.33

Relationship to NQF Outcomes (Out of 100%)				
L7K1	L7S2	L7S3	L7C2	L7C3
37	8	16	16	23

Evaluation	
Assessment Tool	**Weight**
Reports	35%
Mid (Presentation)	15%
Quizes and Performance	10%

Final	40%

Policy	
Attendance	Attendance will be checked at the beginning of each class. University regulations will be strictly followed for students exceeding the maximum number of absences.
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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