



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

ChE 436: Chemical Processing Lab

1 credit hour, 3 contact hour lab, 1 credit hour Eng.

Instructor

Instructor: Rowaida Zoumot

E-mail: zmot@just.edu.jo

Textbooks & References

A. Textbook

	Textbook 1
Title	LAB Manual
Author(s)	Khalil Al-Halhuli
Publisher	
Year	2012
Edition	

B. References

1. G. Austin "*Shreve's Chemical Process Industries*", 5th edn., McGraw-Hill, NY., 984.
2. H. Scott Fogler, *Elements of Chemical Reaction Engineering*, Prentice Hall International Inc, 4th Edition, 2006
3. E. Stocchi, "*Industrial Chemistry*", Ellis Horwood Ltd, Sussex, England, 1991.
4. Kirck & Othmer, "*Encyclopedia of Chemical Technology*", Vol.1-24, Wiley/Prentice Hall, 1979

Specific Course Information

A. Course Catalog:) . Applications of some concepts presented in unit operation, chemical reaction, reactor design and chemical technology courses. The following experiments are expected to be performed: batch reactor, tubular reactor, CSTR, water treatment, oil extraction, phosphoric acid production, Residence Time Distribution and Dynamic of Stirred Tanks.

B. Prerequisites or co-requisites

ChE 433

C. Required/Elective or Selected Elective

Required

Objectives and Outcomes*

1. 1. Appreciate the role of Chemical Engineering in chemical technology. [1, 2, 3, 4, 6, 7].
2. 2 Carry out experiments using different reactors to study reaction kinetics, and to study RTD. [1, 2, 4, 6, 7]

* Number in brackets refer to the Program outcomes

3. 3. Understand the role of sulfuric acid and phosphoric acid in the industry by preparing phosphoric acid from phosphate rocks[1, 2, 4, 6, 7]
4. 4. Understand the Soxhlet extraction distillations techniques. [1, 2, 4, 6, 7]
5. 5. Apply chemical engineering concepts for analyses of operation of different reactors [1, 2, 3, 4, 6,7]
6. 6. To provide some practice in making engineering judgments, estimates and assessing the reliability of your measurements, skills which are very important for any successful engineer [1, 2, 3, 4, 6,7].
7. 7. Monitor the operation behavior of different reactors [1, 2, 3, 4, 6,7]
8. 8. To improve your written communication skills through the lab reports. These will also provide you with experience in organizing, analyzing and interpreting engineering data [1, 2, 3, 4, 5].

Contribution of Course to Meeting the Professional Component

Relationship to Student Outcomes (%)

1	2	3	4	5	6	7
15	18	9	19	9	19	16

Relationship to Chemical Engineering Program Objectives

PEO1	PEO2	PEO3	PEO4	PEO5	PEO6
Y	Y	Y	Y	Y	Y

Topics Covered

- 1- Water treatment
- 2- Oil leaching
- 3- Production of phosphoric acid
- 4- Kinetics of a reaction using a batch reactor
- 5- Steady-state mixed flow reactor (CSTR)
- 6- Tubular reactor (plug flow reactor)
- 7- Dynamics of stirred tanks
- 8- Residence time distribution (RTD)

Evaluation

Assessment Tool

Expected Due Date

Weight

Reports 35%	One week after performed the Experiment
Lab Work and Quizzes 10%	weekly Evaluation
MID Exam 15 %	According to the department schedule
Final Exam 40 %	According to the university schedule