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

CHE203 Fundamentals Of Chemical Engineering (Lab) - JNQF Level: 7
First Semester 2023-2024

Course Catalog
0 Credit Hours. The role of chemical processing, material balances (non-reactive and reactive processes), physical properties estimation, multi-phase systems, energy balances (non-reactive and reactive processes), balances on transient processes.

Text Book	
Title	Elementary Principles of Chemical Processes
Author(s)	Felder, R.M., and Rousseau, R.W.
Edition	3rd Edition
Short Name	Text Book
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Reference 1	Perry's Chemical Engineers' Handbook, 9th Edition 9th Edition	Perry, R.H., and Green, D.W.	9th Edition	

Instructor	
Name	**Mr. SALAHEDDIN ABUYAHYA**
Office Location	CH2 L-2
Office Hours	
Email	seabuyahya@just.edu.jo

Class Schedule & Room

Section 1:
 Lecture Time: Sun : 14:30 - 16:30
 Room: قاعة الندوات/كيماوي

Section 2:
 Lecture Time: Tue : 14:30 - 16:30
 Room: قاعة الندوات/كيماوي

Section 3:
 Lecture Time: Thu : 14:30 - 16:30
 Room: قاعة الندوات/كيماوي

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Weeks 1, 2, 3, 4, 5	Fundamentals of Material Balances	From **Text Book**
Week 6	Single-Phase Systems	From **Text Book**, From **Reference 1**
Weeks 7, 8	Multiphase Systems	From **Text Book**
Week 9	Energy and Energy Balances	From **Text Book**
Weeks 10, 11, 12	Energy Balances on Nonreactive Systems	**Chapter 8** From **Text Book**
Weeks 13, 14, 15	Energy Balances on Reactive Systems	**Chapter 9** From **Text Book**

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Explain the meaning of batch; semibatch; continuous; transient; steady state processes; limiting and excess reactants; degrees of freedom; fractional conversion; yield and selectivity; purge and recycle streams; theoretical and excess air; and dry-basis composition. [5SO1, 1SO3] [1L7K1]	10%	
Draw and fully label a flowchart for a given process description. [2SO3] [1L7C3]	2%	
Perform the degree-of-freedom analysis [3SO1] [1L7K1]	3%	
Write material balance equations for nonreactive systems. [1SO1] [1L7S1]	14%	
Calculate fractional excess; fractional conversion; and extent of reaction for a given reaction [1SO1] [1L7S1]	10%	
List the three balance methods used in balances on reactive systems [3SO1] [1L7K1]	3%	
Write and solve material balance equations for reactive systems. [10SO1] [1L7S1]	10%	
Write material balance equation for reversible and combustion reactions [10SO1] [1L7K1]	10%	
Write and Solve balance equations of non reactive systems [10SO1, 5SO3] [1L7C3]	15%	

Write and solve energy balances for reactive systems [14SO1, 4SO3] [1L7C3]	18%	
Solve EOS for ideal and non-ideal gases [3SO1, 2SO3] [1L7C3]	5%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
85.33		14.67				

Relationship to NQF Outcomes (Out of 100%)		
L7K1	L7S1	L7C3
26	34	40

Evaluation	
Assessment Tool	**Weight**
First Exam	25%
Second Exam	25%
Quizzes+ H.W's	10%
Final Exam	40%

Policy

1 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.

Homework
Working homework problems is an essential part of this course and they represent a key opportunity to learn the subjects discussed. All homework problems assigned during a given week are due at the beginning of class on the second meeting of the following week unless otherwise stated. Late homework will not be accepted. Failure to turn in this particular homework on time will result in a grade of 0 (zero) for the homework contribution to your final grade. Team work is encouraged; however, the work one hands in must represent his/her own effort. Homework solutions will be discussed in class. There will be no handouts of homework solutions.

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.