



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

CHE203 Fundamentals Of Chemical Engineering - JNQF Level: 7

First Semester 2023-2024

Course Catalog

4 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
Ref. 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 2:

Lecture Time: Sun, Tue, Thu : 13:30 - 14:30

Room: C5025

Section 3:

Lecture Time: Sun, Tue, Thu : 12:30 - 13:30

Room: C5021

Prerequisites		
Line Number	Course Name	Prerequisite Type
911020	CHEM102 General Chemistry (2)	Prerequisite / Study
221021	CHE102 Introduction To Chemical Engineering	Prerequisite / Study

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Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1, 2, 3, 4, 5	Fundamentals of Material Balances	Chapter 4 From Text Book
Week 6	Single-Phase Systems	Chapter 5 From Text Book, From Ref. 1
Weeks 7, 8	Multiphase Systems	Chapter 6 From Text Book, From Ref. 1
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

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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, 5SO3] [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. [14SO1] [1L7S1]	14%	
Calculate fractional excess; fractional conversion; and extent of reaction for a given reaction [10SO1] [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
82		18				

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

Evaluation	
Assessment Tool	Weight
First	25%
Second	25%
Quiz	10%
Final	40%

Policy

Policy	<p data-bbox="220 129 296 163">Policy</p> <p data-bbox="220 203 352 232">Attendance</p> <p data-bbox="220 237 1401 304">Attendance will be checked at the beginning of each class. University regulations will be strictly followed for students exceeding the maximum number of absences.</p> <p data-bbox="220 344 347 374">Homework</p> <p data-bbox="220 378 1458 584">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.</p> <p data-bbox="220 624 1382 692">Quizzes Quizzes will be part of this course. No make-up quizzes will be conducted except in the case of a documented emergency</p> <p data-bbox="220 696 411 725">Student Conduct</p> <p data-bbox="220 730 1465 869">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.</p>
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