



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

CHE454 Computer Applications Lab For Chemical Engineers - JNQF Level: 7

First Semester 2023-2024

**Course Catalog**

1 Credit Hours. Introduction to process simulation, the Aspen one packages, Aspen Plus user interface, Physical and thermodynamic properties, pressure changer units, heat exchangers, flow sheet analysis, reactions and reactors, equilibrium separation processes.

**Text Book**

<b>Title</b>	Introduction to Aspen HYSYS Simulation (Handout)
<b>Author(s)</b>	SALAHEDDIN ABU YAHYA
<b>Edition</b>	1st Edition
<b>Short Name</b>	LAB MANUAL
<b>Other Information</b>	

**Instructor**

<b>Name</b>	<b>Mr. SALAHEDDIN ABUYAHYA</b>
<b>Office Location</b>	CH2 L-2
<b>Office Hours</b>	
<b>Email</b>	seabuyahya@just.edu.jo

**Class Schedule & Room**

Section 1:  
Lecture Time: Mon : 11:30 - 14:30  
Room: LAB

Prerequisites		
Line Number	Course Name	Prerequisite Type
224712	CHE471 Equipment Design	Pre./Con.
222540	CHE254 Computer Applications Lab For Chemical Engineering ii Laboratory For Chemical Engineers 1	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Introduction to Process Flow sheet Simulation	From <b>LAB MANUAL</b>
Week 2	Pumps, Compressors and Expanders	From <b>LAB MANUAL</b>
Week 3	Heat Transfer Equipment	From <b>LAB MANUAL</b>
Week 4	Separation Operations	From <b>LAB MANUAL</b>
Week 5	Absorbers	From <b>LAB MANUAL</b>
Week 7	Distillation Columns	From <b>LAB MANUAL</b>
Week 8	5 Logical operations Adjust, Set, Balance and Recycle	From <b>LAB MANUAL</b>
Week 9	Reactors I: CONVERSION REACTOR, AND CSTR REACTOR	From <b>LAB MANUAL</b>
Week 10	Reactors II : PFR REACTOR AND EQUILIBRIUM REACTOR	From <b>LAB MANUAL</b>
Week 11	SELECTED CASE STUDY	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
To introduce students to computer-aided process calculations and process simulations [20SO1, 10SO2, 10SO6] [1L7S1]	40%	
To reinforce basic chemical engineering principles (thermodynamics, fluid mechanics, heat transfer, mass transfer, reaction kinetics) through process simulation. [15SO2] [1L7S2]	15%	
To give hands on experience with Aspen HYSYS covering the basics of the software capabilities and an overview of other advanced functionalities. [20SO1, 10SO2, 10SO6] [1L7S3]	40%	
To effectively communicate the outcomes the results of term project [5SO3] [1L7C3]	5%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
40	35	5			20	

Relationship to NQF Outcomes (Out of 100%)			
L7S1	L7S2	L7S3	L7C3
40	15	40	5

Evaluation	
Assessment Tool	Weight
FINAL EXAM	40%
FIRST EXAM	25%
IN-CLASS QUIZZES	10%
SECOND EXAM	25%

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.
Quizzes	Quizzes will be part of this course. No make-up quizzes will be conducted except in the case of a documented emergency
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 lecture and usually due one week later unless otherwise stated. Late homework will not be accepted. Try to solve the problems independently. The assigned problems will be collected, graded, and returned to you in lecture.
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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