



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

CHE426 Food Engineering - JNQF Level: 7

Second Semester 2022-2023

**Course Catalog**

3 Credit Hours. Rheological properties of food, phase transitions and transformations in food systems, food freezing, food dehydration, transport phenomena in food systems, food packaging.

**Teaching Method:** On Campus

**Text Book**

<b>Title</b>	Introduction to Food Engineering
<b>Author(s)</b>	R. P. Singh, D. R. Heldman
<b>Edition</b>	5th Edition
<b>Short Name</b>	Food Engineering
<b>Other Information</b>	2014

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
2	Fundamentals of Food Process Engineering	Romeo T. Toledo	3rd Edition	
3	Solving Problems in Food Engineering	Stavros Yanniotis	1st Edition	

**Instructor**

<b>Name</b>	<b>Prof. Majdi Al-Mahasneh</b>
<b>Office Location</b>	CH2 L2 / Faculty Offices
<b>Office Hours</b>	Sun : 08:30 - 10:30 Sun : 11:30 - 12:00 Mon : 10:00 - 11:00 Tue : 08:30 - 10:30 Thu : 08:30 - 10:30
<b>Email</b>	mmajdi@just.edu.jo

<b>Class Schedule &amp; Room</b>
Section 1: Lecture Time: Sun, Tue, Thu : 10:30 - 11:30 Room: CH2106

<b>Prerequisites</b>		
<b>Line Number</b>	<b>Course Name</b>	<b>Prerequisite Type</b>
223621	CHE362 Unit Operations	Prerequisite / Study
223640	CHE364 Mass Transfer	Prerequisite / Study

<b>Tentative List of Topics Covered</b>		
<b>Weeks</b>	<b>Topic</b>	<b>References</b>
Weeks 1, 2	Introduction to Food Engineering	From <b>Food Engineering</b> , From <b>2</b> , From <b>3</b>
Weeks 3, 4, 5	Application of Material and Energy balances in Food Industry	From <b>Food Engineering</b> , From <b>2</b> , From <b>3</b>
Weeks 6, 7, 8	Fluid flow and rheology in food systems	From <b>Food Engineering</b>
Weeks 9, 10	High temperature processing	From <b>Food Engineering</b>
Weeks 11, 12	Low temperature processing	From <b>Food Engineering</b>
Week 13	Food Drying	From <b>Food Engineering</b>
Weeks 14, 15	Food Packaging	From <b>Food Engineering</b>

<b>Mapping of Course Outcomes to Program Outcomes and NQF Outcomes</b>	<b>Course Outcome Weight (Out of 100%)</b>	<b>Assessment method</b>
Perform material and energy balances in food processing systems [1SO2] [1L7S1]	25%	1st exam, project and activities, Final exam
Identify Newtonian and non Newtonaian fluids in foods and their applications in pumping system design [1SO2] [1L7S1]	25%	1st exam, project and activities
Recognize the science and engineering principles behind various methods of food processing and preservation including High and low temperatures processing, drying, packaging and non conventional methods. [1SO1] [1L7K1]	30%	2nd exam, project and activities, Final exam

Design various food processing equipment. [1SO2] [1L7S3]	20%	2nd exam, project and activities, Final exam
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Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
30	70					

Relationship to NQF Outcomes (Out of 100%)		
L7K1	L7S1	L7S3
30	50	20

Evaluation	
Assessment Tool	Weight
1st exam	25%
2nd exam	25%
project and activities	10%
Final exam	40%

Policy	
Course project	<p>The course project will have 10% of the total grade. The objective of the project is to get students to understand, analyze and present the details of a specific food industry. The project will involve a team of 2 to 4 students who will prepare and present a project involving a specific food industry. This may include, but not limited to:</p> <ol style="list-style-type: none"> <li>1. Food Thermal processing (canning, pasteurization, etc.)</li> <li>2. Food cooling or freezing (Fruits, vegetables, etc.)</li> <li>3. Dairy processing</li> <li>4. Confectionary processing (chocolate, candy, etc.)</li> <li>5. Food packaging.</li> <li>6. Non-thermal processing methods.</li> <li>7. Food sanitation.</li> <li>8. Food drying or evaporation (dried foods such as coffee, powder milk, powder juice, etc)</li> </ol>
General policies	<p><b>Attendance</b> Attendance will be checked at the beginning of each class. University regulations will be strictly followed for students exceeding the maximum number of absences (20%) of the total contact hours.</p> <p><b>HW Homework</b> is important part of this course. Although HW will not be part of the course grade, it is important to do homework assigned by instructor in order to be able to solve exam problems.</p> <p><b>Student Conduct</b> 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>

