



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

CHE312 Materials Science And Engineering

Summer Semester 2019-2020

Course Catalog

3 Credit Hours. 3 Credit hours (3 h lectures). Atomic structure and bonding. Crystal structures. Solidification, crystalline imperfections and diffusion in solids, Mechanical properties of Metals. Thermal processing of metals. Phase diagrams and engineering alloys. Polymeric, ceramic and composite materials

Text Book

Title	Materials Science and Engineering: an Introduction
Author(s)	W.D. Callister
Edition	7th Edition
Short Name	Text book
Other Information	

Instructor

Name	Prof. Munther Kandah
Office Location	CH2 L2
Office Hours	
Email	mkandah@just.edu.jo

Class Schedule & Room

Section 1:
Lecture Time: Sun, Mon, Tue, Wed : 08:30 - 10:00
Room: منصة الكترونية

Prerequisites		
Line Number	Course Name	Prerequisite Type
913470	CHEM347 Physical Chemistry (2)	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	General Introduction Introduction to Materials Selection	From Text book
Week 1	Classification of Materials Atomic Structure and Bonding Crystal Structures	From Text book
Weeks 2, 3	Crystal Structures Solid Solutions	From Text book
Week 4	Crystal Imperfections	From Text book
Weeks 5, 6	Diffusion	From Text book
Weeks 7, 8	Mechanical Properties of Metals	From Text book
Weeks 9, 10	Phase Diagrams	From Text book

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
To present the basic fundamentals and terminologies of materials sciences and engineering. [1001]	5%	
To study atomic structure and interatomic bonding. [1001]	5%	
To study the structure of crystalline solids. [1001]	20%	
To study imperfections in solids. [1001]	10%	
To study diffusion process in metals. [501, 502]	10%	
To study the mechanical properties of metals. [501, 502]	20%	
Study the phase diagrams and relate them to the design and control of heat-treating procedures. [401, 402, 206]	30%	

Relationship to Program Student Outcomes (Out of 100%)						
1	2	3	4	5	6	7
67	27				6	

Evaluation	
Assessment Tool	Weight
Exam 1	25%
Exam 2	25%
Homework and Quizzes	10%

Final Exam	40%
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Policy	
Assessment Tool	Quizzes One week after homework problems are assigned 10% First Exam According to the schedule posted by the Department schedule 25 % Second Exam According to the schedule posted by the Department schedule 25 % Final Exam According to the schedule posted by the University for the finals? exams 40 %

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