



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

ME214 Strength Of Materials - JNQF Level: 7

First Semester 2023-2024

Course Catalog

3 Credit Hours. Mechanics of deformable bodies. Concepts of stress and strain. Classification of materials behavior. Stress-strain relations. Generalized Hook's law. Applications to engineering problems: members under axial loads, torsion of circular rods and tubes, bending and shear stresses in beams, combined stresses in beams, transformations of stresses, deflection of beams, and buckling.

Text Book

Title	Mechanics of Materials, 7th Ed. F. P. Beer and E. R. Johnston, Jr.
Author(s)	F. P. Beer and E. R. Johnston, Jr.
Edition	7th Edition
Short Name	Text
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Reference	Mechanics of Materials	Hibbeler	9th Edition	

Instructor

Name	Dr. Mohammad Omari
Office Location	M5L3
Office Hours	Mon : 08:00 - 10:00 Mon : 14:00 - 15:30 Tue : 09:00 - 13:30 Wed : 14:00 - 15:30 Thu : 14:00 - 16:00
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Class Schedule & Room
Section 1: Lecture Time: Mon, Wed : 10:00 - 11:30 Room: M2008 Section 2: Lecture Time: Mon, Wed : 11:30 - 13:00 Room: CH2110

Prerequisites		
Line Number	Course Name	Prerequisite Type
252112	ME211B Statics	Prerequisite / Pass

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1, 2	Concept of stress and strain	
Weeks 2, 3	Axial loading	
Week 4	Mechanical properties of materials	
Week 5	Torsion	
Weeks 6, 7, 8	Bending stresses	
Week 9	Transverse shear	
Week 10	Combined loads	
Week 11	Stress transformation, including Mohr's circle,	
Weeks 12, 13	Principal stresses	
Weeks 14, 15	Beam deflections	
Week 16	Buckling	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Calculate stresses, strains, and deformations in axially loaded members including temperature effect. [1SO1][1L7K1]	20%	
Solve statically indeterminate problems subjected to one or a combination of different loads. [1SO1][1L7S2]	10%	
Determine stresses and deformations in a circular member subjected to torsion. [1SO1][1L7K1, 1L7S2]	10%	
Calculate normal and shearing stresses in beams subjected to bending and/or transverse loads. [1SO1][1L7S2]	25%	

Solve problems using stress transformation equations and Mohr's circle. [1SO1] [1L7S1]	15%	
Determine the deflections of statically determinate and indeterminate beams using double integration and superposition. [1SO1] [1L7K1]	20%	

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

Relationship to NQF Outcomes (Out of 100%)		
L7K1	L7S1	L7S2
45	15	40

Evaluation	
Assessment Tool	Weight
first_1	25%
second_1	25%
homework	10%
final exam	40%

Policy	
Evaluation	Attendance is mandatory Evaluation: First Exam: 30% Second Exam: 30% Final Exam: 40%

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