



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

CE917 Mechanics Of Composite Materials - JNQF Level: 10

Second Semester 2022-2023

Course Catalog

3 Credit Hours. Introduction, Classification and characteristics of composite materials, Introduction to Manufacturing Procedures of Fiber-Reinforced Composite Laminates, Stress-Strain Relationships, Overview of Experimental Methods for Determination of Lamina Strength and Stiffness, Modeling of Stress-Strain Behaviors of Composite Materials, Failure Theories for an Orthotropic composite Lamina, Micro-Mechanical Behavior of an Orthotropic composite Lamina, Design With Composite Materials

Teaching Method: On Campus

Text Book

Title	Mechanics of composite materials. , last edition.
Author(s)	R. M. Jones
Edition	5th Edition
Short Name	Reference #1
Other Information	McGraw-Hill

Course References

Short name	Book name	Author(s)	Edition	Other Information
Reference #2	Mechanics of Composite Materials with MATLAB	George Z. Voyiadjis and Peter I. Kattan	3rd Edition	Springer, 2005
Reference #3	Finite Element Analysis of Composite Materials Using Abaqus. ,	Ever J. Barbero	3rd Edition	CRC-Press, Taylor & Francis Group, 2013
Reference #4	New material models for nonlinear stress-strain behavior of composite materials	G. A. Abu-Farsakh	1st Edition	Composites, Vol. 20, No. 4, July 1989, pp. 349-360

Reference #5	New failure criterion for nonlinear composite materials	G. A. Abu-Farsakh and Y. A. Abdel-Jawad	1st Edition	Journal of Composites Technology & Research, JCTREER, Vol. 16, No. 2, April 1994, pp. 138-145
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Instructor	
Name	Prof. Ghazi Abu-Farsakh
Office Location	C2 L3
Office Hours	Mon : 13:00 - 16:00 Tue : 10:30 - 12:30 Wed : 10:00 - 11:30 Thu : 12:00 - 14:00
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Class Schedule & Room
Section 2: Lecture Time: Wed : 13:00 - 16:00 Room: قاعة ندوات /مدني

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1, 2	Introduction to composite material	From Reference #1 , From Reference #2 , From Reference #3
Weeks 3, 4	2. Introduction to Manufacturing Procedures of Fiber-Reinforced Composite Laminates	From Reference #1
Weeks 5, 6	3. Stress-Strain Relationships	From Reference #1
Weeks 7, 8	Modeling of Stress-Strain Behaviors of Composite Materials	From Reference #1 , From Reference #4
Weeks 9, 10	5. Failure Theories for an Orthotropic composite Lamina	From Reference #1 , From Reference #5
Weeks 11, 12	Micro-Mechanical Behavior of an Orthotropic composite Lamina	From Reference #1
Weeks 13, 14	Overview of Experimental Methods for Determination of Lamina Strength and Stiffness	From Reference #1
Weeks 15, 16	Seminars for presenting term papers	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
To be able to identify and recall characteristics, advantages and disadvantages of composite materials [1L10K1]	5%	
To demonstrate manufacturing procedures of fiber-reinforced composite Laminates [1L10K1]	10%	
To be able to express stress-strain relationships for a composite material lamina [1L10S1]	20%	
To practice modeling of stress-strain behaviors of composite materials [1L10S2]	10%	
To be able to identify, compare and practice different failure theories for an orthotropic composite Lamina [1L10S3]	20%	
To express the micro-mechanical behavior of an orthotropic composite Lamina [1L10S2]	10%	
8. To demonstrate an overview of experimental methods for determination of lamina strength and stiffness [1L10S3]	5%	
To prepare a term paper which discusses an important topic related to mechanics of composite materials [1L10C3]	20%	

Relationship to NQF Outcomes (Out of 100%)				
L10K1	L10S1	L10S2	L10S3	L10C3
15	20	20	25	20

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