



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

Course name and number:

AE537 Composite Materials

Credit, contact hours and categorization:

Credit and contact hours	Contact hours	Categorization
3 Credit Hours	Sunday-Tuesday-Thursday 1-hour lecture Or Monday-Wednesday 1.5-hours lecture	Engineering Topic

Instructor's or course coordinator's name:

Name	Dr. Abdallah Almomani
Office location	N1-L2
Email address	amalmomani0@just.edu.jo

Textbook and other supplemental materials:

Textbook	
Title	Engineering Mechanics of Composite Materials
Author(s)	Isaac M. Daniel and Ori Ishai
Edition	2nd Edition
Other Information	Oxford University Press 2011

References			
Book Name	Author(s)	Edition	Other Information
Mechanics of composite materials	Autar K. Kaw	2 nd Edition	Ref 1: Taylor & Francis Group
Advanced Composites	Cindy Foreman	1 st Edition	Sn IAP, Inc training manual
Mechanics of Materials	F.P. Beer, E.R. Johnston, Jr., and J.T. DeWolf	7 th Edition	McGraw-Hill
Manufacturing Technology for Aerospace Structural Materials	Flake C Campbell Jr	1 st Edition	Elsevier

Course information:

Course Catalogue
Application of composite materials in aerospace industry, Fiber reinforced composites, Stress, strain, and strength of composite laminate, Failure criterion, Environmental effect, Design of composite structure.
Course type : This course is elective for the program.
Prerequisites or co-requisites
Be in his graduation year and have studied materials and structures courses



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Specific goals of the course :

Specific outcomes of instruction and the student outcomes (SO) mapping		
Outcomes	SO Mapping	Course Outcome Weight (Out of 100%)
Demonstrate what are composite materials, their classifications, their applications, and manufacturing processes.	2SO 1, 5SO 4, 3SO 7	10%
Introduce some basic concepts about the composite materials such as the lamina and laminate.	2SO 1, 5SO 4, 3SO 7	10%
Demonstrate Generalized Hooks law for both isotropic and anisotropic materials and the transformation of coordinates.	7SO 1, 5SO 7	12%
Discuss in detail the Lamina analysis.	14SO 1, 10SO 7	24%
Discuss in detail the elastic behavior of composite lamina - micromechanics of composites.	14SO 1, 8SO 7	22%
Discuss in details of the lamination theory and types of failure.	11SO 1, 11SO	22%

Brief list of topics to be covered:

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Introduction to composite materials	Chapter 1,2 Textbook
Weeks 1, 2	Manufacturing of composite materials	Chapter 1,2 Textbook
Week 2	Repair of composite materials	Chapter 1,2 Textbook
Week 3,4	A review of stress and strain, A review of Hooks law for isotropic materials	Chapter 3 Textbook
Weeks 5, 6	Lamina Analysis	Chapter 3,4 Textbook
Weeks 7, 8	Micromechanics of elastic properties	Chapter 4 Textbook
Weeks 8,9	Lamination theory	Chapter 5 Textbook
Week 10	First ply failure in composite laminates	Chapter 7 Textbook Chapter 2,5 Ref 1
Weeks 11, 12	Sandwich plates and other higher order theories	Chapter 5 Ref 1
Weeks 13,14	Interlaminar fracture	Chapter 7 Textbook
Week 15	Failure mechanisms in composites	Chapter 7 Textbook
Weeks 15, 16	Hygrothermal effects in composites	Chapter 6 Textbook