



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

Course name and number:

AE533 Aircraft Structure 1

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	Aircraft Structures for Engineering Students		
Author(s)	Megson, T. H. G		
Edition	5th Edition		
Other Information	Elsevier Aerospace Engineering Series		
References			
Book Name	Author(s)	Edition	Other Information
Fundamentals of Aircraft Structural Analysis	Curtis, H.D	1st Edition	McGraw Hill
Mechanics of Aircraft Structures	Sun, C. T., John	2nd Edition	Wiley & Sons
Airframe Structural Design	Niu, C.Y	2nd Edition	Connmilit Press Ltd, Hong Kong

Course information:

Course Catalogue
Basics of elasticity. Bending, buckling, and Vibration of Euler-Bernoulli beam. Aerodynamic loads. Functions of structural components. Fabrication of structural components. Principles of stressed skin construction; bending, shear, and torsion of open and closed thin-walled, single and multi-cell, cross section beams, including shear center and structural idealization.
Course type : This course is required to fulfill the program.



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Prerequisites or co-requisites		
Line Number	Course Name	Prerequisite Type
714310	AE431 Machine Elements Design	Prerequisite / Study

Specific goals of the course :

Specific outcomes of instruction and the student outcomes (SO) mapping		
Outcomes	SO Mapping	Course Outcome Weight (Out of 100%)
Describe components of the airplane structure and identify its structural function and Fabrication techniques.	10SO 8	10%
Introduce the basic elasticity.	10SO 1	10%
Develop the students' ability to conduct bending analysis of thin walled beams; open and single cell closed beams	10SO 1, 10SO 2, 7SO 6	27%
Develop the students' ability to conduct torsion and shearing analysis of thin-walled beams; open and closed components	27SO 1	27%
Describe and implement the principle of component idealization.	6SO 1, 5SO 2, 5SO 6, 5SO 8	21%
Introduce and develop the the macro approach of composite material mechanics.	2SO 1, 1SO 2, 1SO 6, 1SO 8	5%

Brief list of topics to be covered:

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Structural components of Aircraft	Chapter 12 From Textbook
Week 2	Airframe loads	Chapter 14 From Textbook
Weeks 3, 4	Bending of Open and Closed Thin Walled	Chapter 16 From Textbook
Weeks 5, 6	Shear of Beams	Chapter 17 From Textbook
Week 7	Torsion of Beams	Chapter 18 From Textbook
Week 8	Combined Open and Closed Section Beams	Chapter 19 From Textbook
Weeks 9, 10	Structural Idealization	Chapter 20 From Textbook
Weeks 11, 12	Wing Spars and Box Beam	Chapter 21 From Textbook
Week 13	Fuselage	Chapter 22 From Textbook
Week 14	Wings	Chapter 23 From Textbook
Week 15	Fuselage Frame and Wing Ribs	Chapter 24 From Textbook
Weeks 16	Laminate Composite Structures	Chapter 25 From Textbook