The University of Jordan
School of Engineering

Department	Course Name	Course Number	Semester
Aircraft maintenance Engineering	Field Aeronautics Lab. II	0994365	Summer

2025 Course Catalog Description

Short period oscillation, The phugoid oscillation, Trim curves and neutral point determination, Bending of Aircraft Wing (Symmetric Wing, The Role of the Shear Center), Torsion of Airfoils (Twocell Section, Effect of the Spar), Thin-walled Shear Beams (Three Stringer Beams, The Role of the Shear Center), Structural Dynamics (Vibration of Beam, Various Vibration Modes of a Cantilevered Plate), Whole-field Stress Analysis (Photo elasticity of Grooved Specimen, Effect of Notch Geometry).

Instructors

Name	E-mail	Section	Office Hours	Lecture Time

Text Books

	Text book 1	Text book 2
Title	Lab Manual	
Author(s)		
Publisher, Year, Edition		

References

Books	1. Aircraft Structures for engineering students, T. H. G. Megson, 5th Edition Elsevier Ltd 2. Flight Stability and Automatic Control, R. C. Nelson, 2nd Edition, McGraw-Hill. 3. Fundamentals of Aerodynamics, J. D. Anderson, 6th Edition, McGraw Hill, Inc. sixth Edition, 2017.
Journals	
Internet links	

Prerequisites

Prerequisites by topic	
Prerequisites by course	Aeronautics Lab. I 0994364
Co-requisites by course	
Prerequisite for	Aircraft Structure I

Topics Covered

Week	Topics	Chapter in Text
1	Introduction	
2	Unsymmetrical Bending of a Cantilever Beam	
3	Shear Center	
4	I-Beam in Bending	
5	Hollow Shaft (Tubee) Analyis	
6	Wing strain Analysis	
7	Wing strain Analysis using Ansys	
8	MidTerm	
9	Trim curves and neutral point determination	
10	Dynamic stability of longitudinal motion. Short period oscillation (Rapid incidence Adjustment) and The Phugoid Oscillation	
11	Electrical gyroscope	
12	Hydraulic Landing Gear system	

13	Cockpit Instrumentation system	
14	Aircraft Performance	

Mapping of Course Outcomes to ABET Student Outcomes

SOs	Course Outcomes
5,6	Enable students to study the stability of longitudinal and lateral motions of airplane. Calculate, measure and find the deflections, normal stress, shear stress and buckling stress for different sections. Enhance the students written, oral, and graphical communication skills. Know a variety of experimental techniques and some practical experience.

Evaluation

Assessment Tools	Expected Due Date	Weight
First Exam		25
Second Exam		25
Final Exam		50

Contribution of Course to Meet the Professional Components

This course is one of the first opportunities for engineering students to encounter the fundamental principles of design problem solving. It is an important prerequisite course for number of designs related-courses, which occur later in the programs of engineering students.

Relationship to Student Outcomes

SOs	1	2	3	4	5	6	7
Availability					X	X	

Relationship to Aeronautical Engineering Program Objectives (AEPOs)

AEPO1	AEPO2	AEPO3	AEPO4	AEPO5

ABET Student Outcomes (SOs)

1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3	An ability to communicate effectively with a range of audiences
4	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Updated by ABET Committee, 2025