The University of Jordan
School of Engineering

Department	Course Name	Course Number	Semester
Mechanical Engineering	Aerodynamics 1	0994363	Fall

2025 Course Catalog Description

Basics of aerodynamics: the concept of lift and drag, source panel method, Kutts-Joukwski theorem, Aerodynamic characteristics of airfoils: airfoil geometry parameters, vortex panel method, Kutta condition, thin-airfoil theory, high-lift airfoil section, Wings of finite span: lifting-line theory, trailing vortices and downwash, vortex-induced drag, vortex-lattice method, Effects of boundary layer interaction, Aerodynamic design

Instructors

Name	E-mail	Section	Office Hours	Lecture Time

Text Books

	Text book 1	Text book 2
Title	Fundamentals of Aerodynamics	
Author(s)	J. D. Anderson	
Publisher, Year, Edition	6th Edition McGraw-Hill's	

References

Books	Aerodynamics for engineering students, J. Bertin & R.M. Cunnings, 5th Edition, Prentice Hall.
Journals	
Internet links	

Prerequisites

Prerequisites by topic	-
Prerequisites by course	0904361 Fluid mechanics
Co-requisites by course	-
Prerequisite for	-

Topics Covered

Lecture	Topics	Chapter in Text
1-2	Basic concepts and definitions	
3-6	Potential flow	
7-9	Two-dimensional wing theory	
10-13	Finite wing theory	

Mapping of Course Outcomes to ABET Student Outcomes	
SOs	**Course Outcomes**
1,2	Calculate the forces on bodies in flow; Lift forces, Drag forces and moments Calculate Pressure Distribution on an aerofoil. Learn how to construct potential flow over arbitrary bodies using elementary flows. Learn about the wing sections and aerofoil theories. Estimate the coefficients of Lift and Drag from pressure distribution. Apply the panel method for D lifting

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

Contribution of Course to Meet the Professional Components

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