



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

AE344 Aerodynamics (1) - JNQF Level: 7

First Semester 2023-2024

Course Catalog

3 Credit Hours. Basics of aerodynamics: the concept of lift and drag, source panel method, Kutta-Joukowski 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.

Text Book

Title	Fundamentals of Aerodynamics
Author(s)	J. D. Anderson
Edition	6th Edition
Short Name	Textbook
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref#1	Aerodynamics for engineering students	El Houghton, PW Carpenter	5th Edition	
Ref#2	Aerodynamics for engineering	. J. Bertin & R. M. Cunnings	5th Edition	
Ref#3	Introduction to Fluid Mechanics	R. W. Fox and A. T. McDonald	5th Edition	

Instructor

Name	Dr. Montasir Hader
Office Location	N1L2

Office Hours	Sun : 09:30 - 10:30 Sun : 11:30 - 12:30 Mon : 13:30 - 14:30 Tue : 09:30 - 10:30 Tue : 11:30 - 12:30 Thu : 09:30 - 10:30
Email	hader@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Tue, Thu : 10:30 - 11:30 Room: CH2110

Prerequisites		
Line Number	Course Name	Prerequisite Type
712010	AE201 Introduction To Aeronautical Engineering	Prerequisite / Study
713210	AE321 Thermodynamics	Prerequisite / Study
713410	AE341 Fluid Mechanics	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1, 2	Basic concepts and definitions	Chapter 1 From Textbook
Weeks 3, 4, 5, 6	Potential flow	Chapters 2, 3 From Textbook
Weeks 7, 8, 9, 10, 11	Two-dimensional wing theory	Chapter 4 From Textbook
Weeks 12, 13, 14, 15, 16	Finite wing theory	Chapter 5 From Textbook

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Explain the forces on bodies in flow; Lift forces, Drag forces and moments [1SO1] [1L7K1]	10%	
Explain the pressure distribution on an airfoil. [1SO1] [1L7K1]	10%	
Estimate the coefficients of Lift and Drag from pressure distribution. [1SO1] [1L7K1]	20%	
Explain the potential flow over arbitrary bodies using elementary flows. [1SO1] [1L7K1]	20%	
Define the principles of inviscid and incompressible flow over airfoils and flow over finite wings. [1SO1] [1L7K1]	20%	
Apply the panel method for 2-D lifting [1SO1] [1L7K1]	20%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
100						

Relationship to NQF Outcomes (Out of 100%)
L7K1
100

Evaluation	
Assessment Tool	Weight
First Exam	25%
Second Exam	25%
Project	10%
Final Exam	40%

Policy	
Attendance	<p>The student is required to attend all the registered courses. The instructor shall register student attendance or absence electronically.</p> <p>JUST policy requires the faculty member to assign ZERO grade (35) if a student misses 20% of the classes.</p> <p>If you miss a class, it is your responsibility to find out about any announcements or assignments you may have missed</p>
Exam/Homework	<p>Makeup exam should not be given unless there is a valid excuse according to JUST policies. Arrangements to take an exam at a time other than the one scheduled MUST be made prior to the scheduled exam time.</p> <p>Cheating or copying from neighbor on exam, quiz, or homework is an illegal and unethical activity. Standard JUST policy will be applied.</p> <p>All assignments must be your own work (your own words)</p> <p>Students are responsible for all information provided in lecture. Information presented in class supersedes any information posted elsewhere.</p>

Date Printed: 2023-12-06