



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

Course name and number:

AE 444 Aeronautic Lab. 1

Credit, contact hours and categorization:

Credit and contact hours	Contact hours	Categorization
1 Credit Hours	One day a week : 3-hours Lab	Engineering Topic

Instructor's or course coordinator's name:

Name	Dr. Ahmad Alshyyab
Office location	N1-L2
Email address	asalshyyab@just.edu.jo

Textbook and other supplemental materials:

Textbook			
Title	Class Hanout		
Author(s)	AE		
Edition			
Other Information			
References			
Book Name	Author(s)	Edition	Other Information
Fundamentals of Aerodynamics	J. D. Anderson	6th Edition	
Low-Speed wind tunnel testing	J.B. Barlow, W. H. Rae Jr., A. Pope	1st Edition	

Course information:

Course Catalogue		
Basic measurements of aerodynamic forces and pressure distribution using low speed wind tunnel. Supersonic flow, flight demonstration, tunnel experiments. Aerospace propulsion (gas turbines), ramjets, etc.). Basic aircraft sensors.		
Course type : This course is required to fulfill the program.		
Prerequisites or co-requisites		
Line Number	Course Name	Prerequisite Type
714130	AE413 Mechanics Of Materials Lab	Prerequisite / Study
714430	AE443 Gas Dynamics	Prerequisite / Study



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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%)
Conduct experiments that reinforce and verify concepts covered in Aerodynamic courses	10SO 1, 10SO 2, 40SO 6, 40SO 8	20%
Analyze experimental data and quantitatively evaluate a flow system]	20SO 1, 30SO 6, 50SO 8	20%
To teach the students how to perform the study of a family of NACA/airfoil profiles [20SO 1, 30SO 2, 20SO 6, 30SO 8]	20SO1, 30SO2, 20SO6, 30SO8	20%
Operate a wind tunnel and utilize various pressure probes/liquid manometers for the measurement of total and static pressure within the flow field, from which be able to compute flow speed []	20SO 2, 60SO 6, 20SO 8	20%
Enhance the students written, oral, and graphical communication skills	60SO 3,40SO 5	20%

Brief list of topics to be covered:

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1	Introduction.	From Textbook
Weeks 2	Calibration of Wind Tunnel	From Textbook
Weeks 3	Airfoil Characteristics	From Textbook
Weeks 4	Pressure Distribution over an Airfoil	From Textbook
Weeks 5	Pressure Distribution over an Airfoil using Air Flow Bench (Airofoil with Tappings)	From Textbook
Weeks 6	Drag Measurement on Circular Cylinder	From Textbook
Weeks 7	The effect of high lift devices on Airfoil Characteristics	From Textbook
Weeks 8	MidTerm	From Textbook
Weeks 9	Bernoulli's Equation Applied to A Convergent-Divergent Passage	From Textbook
Weeks 10	Boundary Layers	From Textbook
Weeks 11	Demonstrates the thermodynamics and fluid mechanics of the adiabatic expansion of air	From Textbook



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	through subsonic and supersonic nozzles	
Weeks 12	Investigates subsonic and supersonic air flow, including flow around two dimensional models	From Textbook
Weeks 13	Round Turbulent Jet	From Textbook