



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

Course name and number:

AE538 Aircraft Design

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. Muath Bani-Hani
Office location	N1-L2
Email address	mabanihani@just.edu.jo

Textbook and other supplemental materials:

Textbook			
Title	Aircraft Design: A Conceptual Approach		
Author(s)	Daniel P. Raymer		
Edition	5th Edition		
Other Information			
References			
Book Name	Author(s)	Edition	Other Information
Introduction to Aircraft Performance, Selection and design	Hale, Francis J	1 st Edition	
Aircraft Performance and Design	John D. Anderson, Jr.	1 st Edition	
Introduction to aircraft design	Fielding, John P	1 st Edition	
Aircraft design projects for engineering students	Jenkinson	1 st Edition	
Airplane Design I - VIII	Jan Roskam	2 nd Edition	

Course information:

Course Catalogue
Conceptual design of a modern airplane to satisfy a given set of requirements. Estimation of size, selection of configuration, weight and balance, and performance of airplane. Satisfaction of stability, control, and handling quality requirements.
Course type : This course is required to fulfill the program.



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Prerequisites or co-requisites		
Line Number	Course Name	Prerequisite Type
714820	AE482 Aircraft Performance	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%)
Classify the different phases of aircraft design	5SO 2	5%
Perform conceptual design for an aircraft based on historical data and a conceptual sketch	60SO 2, 10SO 3, 15SO 6, 15SO1	10%
Select initial geometries for the major aircraft components based on the understanding of the aircraft mission and requirements	60SO 2, 15SO 7, 15SO1	10%
Analyze the mission segments and maneuvers of the aircraft and select the critical performance parameters for the intended design	5SO 2, 5SO1	10%
Design an aircraft based on the performance parameters	5SO 2, 2SO 3, 3SO 6, 10SO 8, 5SO1	25%
Know the key concepts required to develop a credible initial lay-out for a conceptually designed aircraft	20SO 2, 5SO1	25%
Realize and comprehend the main consideration for aircraft conceptual design	1SO 2, 8SO 8, 1SO1	10%
Comply with the regulations and the design considerations of the internal compartments of an aircraft	1SO 2, 8SO 7, 1SO1	5%

Brief list of topics to be covered:

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1	Overview of aircraft design process	From Textbook
Week 2,3,4	Aircraft sizing from a conceptual sketch	From Textbook
Weeks 5,6,7	Geometry selection of airfoil and major aircraft components	From Textbook
Weeks 8,9	Selection of critical aircraft performance parameters	From Textbook



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Weeks 11,12,13	Initial sizing of the airplane	From Textbook
Weeks 12,13,14	Configuration layout and special design considerations	From Textbook
Weeks 15,16	Layout of the crew station and passengers/payload compartments	From Textbook