



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

AE538 Aircraft Design - JNQF Level: 7

Second Semester 2023-2024

**Course Catalog**

3 Credit Hours. Conceptual design of a modern airplane to satisfy a given set of requirements. Estimation of size, selection of configuration, weight, and balance, and airplane performance. Satisfaction of stability, control, and handling quality requirements.

**Teaching Method:** On Campus

**Text Book**

<b>Title</b>	Aircraft Design: A Conceptual Approach
<b>Author(s)</b>	Daniel P. Raymer
<b>Edition</b>	5th Edition
<b>Short Name</b>	Textbook
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
Ref #1	Introduction to Aircraft Performance, Selection and design	Hale, Francis J	1st Edition	
Ref #2	Aircraft Performance and Design	John D. Anderson, Jr.	1st Edition	
Ref #3	Introduction to aircraft design,	Fielding, John P.	1st Edition	
Ref #4	Aircraft design projects for engineering students	Jenkinson and	1st Edition	
Ref #5	Airplane Design I - VIII	Jan Roskam	2nd Edition	

Instructor	
Name	Dr. MUATH BANI HANI
Office Location	-
Office Hours	Sun : 11:30 - 12:30 Mon : 10:00 - 12:00 Tue : 11:30 - 12:30 Wed : 10:00 - 12:00
Email	mabanihani@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Mon, Wed : 08:30 - 10:00 Room: CH2110

Prerequisites		
Line Number	Course Name	Prerequisite Type
714820	AE482 Aircraft Performance	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Overview of aircraft design process	<b>Chapter 2</b> From <b>Textbook</b>
Weeks 2, 3, 4	Aircraft sizing from a conceptual sketch	<b>Chapter 3</b> From <b>Textbook</b>
Weeks 5, 6, 7	Geometry selection of airfoil and major aircraft components	<b>Chapter 4</b> From <b>Textbook</b>
Weeks 8, 9	Selection of critical aircraft performance parameters	<b>Chapter 5</b> From <b>Textbook</b>
Weeks 10, 11, 12	Initial sizing of the airplane	<b>Chapter 6</b> From <b>Textbook</b>
Weeks 12, 13, 14	Configuration layout and special design considerations	<b>Chapters 7 &amp; 8</b> From <b>Textbook</b>
Weeks 15, 16	Layout of the crew station and passengers/payload compartments	<b>Chapter 9</b> From <b>Textbook</b>

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Classify the different phases of aircraft design. [100SO2] [100L7S1]	10%	Exam 1
Perform conceptual design for an aircraft based on historical data and a conceptual sketch, analyze the aircraft's mission segments and maneuvers, and select the critical performance parameters for the intended design. [100SO1] [100L7K1]	30%	Exam 1, Final Exam

Select initial geometries for the major aircraft components based on the understanding of the aircraft mission and requirements. [100SO1] [100L7K1]	15%	Exam 2
Design an aircraft based on the performance parameters by implementing the key concepts required to develop a credible initial layout for a conceptually designed aircraft and apply the regulations and the design considerations to the internal compartments of an aircraft [100SO1] [100L7K1]	45%	Exam 2, Final Exam

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
90	10					

Relationship to NQF Outcomes (Out of 100%)	
L7K1	L7S1
90	10

Evaluation	
Assessment Tool	Weight
Exam 1	30%
Exam 2	30%
Final Exam	40%

Policy	
Course Policy	<p><b>Attendance</b> The student is required to attend all the registered courses. The instructor shall register student attendance or absence electronically. JUST policy requires the faculty member to assign ZERO grade (35) if a student misses 20% of the classes. If you miss a class, it is your responsibility to find out about any announcements or assignments you may have missed</p> <p><b>Exam/Homework</b> 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. Cheating or copying from a neighbor on exam, quiz, or homework is an illegal and unethical activity. The standard JUST policy will be applied. All assignments must be your own work (your own words) Students are responsible for all the information provided in the lecture. Information presented in class supersedes any information posted elsewhere.</p>