



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

**Course name and number:**

**AE563 Aircraft Stability & Control**

**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	Flight Stability & Automatic Control		
Author(s)	Robert Nelson (1998)		
Edition	2 <sup>nd</sup> Edition		
Other Information	McGraw Hill		
References			
Book Name	Author(s)	Edition	Other Information
Dynamics of Flight: Stability & Control	Etkin, B. and Reid, L. (1998)	3rd Edition	Wiley
Introduction to Aircraft Flight Dynamics	Schmidt, L.V. (1998)	1st Edition	
Airplane Flight Dynamics and Automatic Flight Control, Part I	Roskam, J. (2007)	1st Edition	DAR Corp
Flight Dynamics Principles	Cook, M.V. (2007)	2nd Edition	Elsevier

**Course information:**

Course Catalogue
Introduction to stability and control of flight vehicles. Flight dynamic equations of unsteady motion. Inertial and aerodynamic coupling. Stability and control of longitudinal and lateral directional motions. Dynamic stability and control.
<b>Course type :</b> This course is <b>required</b> to fulfill the program.



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Prerequisites or co-requisites		
Line Number	Course Name	Prerequisite Type
714640	AE464 Automatic Control	Prerequisite / Study
713440	AE344 Aerodynamics (1)	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%)
To learn how to determine static longitudinal, directional & lateral stability and control derivatives, and criteria for a stable airplane	50SO 1, 10SO 3, 5SO 5, 15SO 7, 20SO 8	25%
To develop an ability to size the control surfaces and to determine control effectiveness of power	65SO 1, 10SO 3, 15SO 7, 10SO 8	25%
To learn how to determine the control stick forces and hinge moments	85SO 1, 15SO 8	10%
To learn how to determine longitudinal and lateral motion derivatives	80SO 1, 5SO 3, 15SO 8	20%
To introduce the concept of dynamic stability & control and flying qualities	50SO 1, 10SO 3, 15SO 5, 5SO 6, 15SO 7, 5SO 8	20%

**Brief list of topics to be covered:**

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1	Introduction, Atmospheric Properties, and Aerodynamics	From <b>Textbook</b>
Weeks 2,3,4,5	Static stability and control	From <b>Textbook</b>
Weeks 6,7,8,9	Flight dynamics	From <b>Textbook</b>
Weeks 10,11,12	Flight analysis	From <b>Textbook</b>
Weeks 13,14,15	Flight control	From <b>Textbook</b>