

**AE 372**  
**Flight Mechanics**  
Spring 2017  
Friday 9:40-12:30

**Instructor:** Assoc.Prof. Dr.İlkay Yavrucuk  
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**Topics:**

1. Introduction
2. Definitions, Coordinate Systems, Euler Angles, Transformations
3. Aircraft Equations of Motion
4. Trim and Linearization (Small Gain Approach)
5. Aircraft Stability in Steady Flight
6. Longitudinal Flight Dynamics and Key Stability Derivatives
7. Lateral Flight Dynamics and Key Stability Derivatives

**Grading :**

2 Midterms:	%50 (+/-5%)
Final:	%35 (+/-5%)
Homework & Lab Work:	%15 (+/-5%)

**Text Books:**

1. Etkin, Bernard, *Dynamics of Atmospheric Flight*, John Wiley & Sons Inc., 1972. (Dover Publications since 2005) Available at [www.doverpublications.com](http://www.doverpublications.com)
2. Etkin, Bernard and Reid, Lloyd, *Dynamics of Flight Stability and Control*, 3<sup>rd</sup> Edition. John Wiley & Sons, Inc., 1996.

**References:**

1. Nelson, Robert, *Flight Stability and Automatic Control*, McGraw-Hill Book Co., 1989. Electronically available at the METU E-books library.
2. Stevens, Brian and Lewis, Frank, *Aircraft Control and Simulation*, 2<sup>nd</sup> Edition, John Wiley & Sons, Inc., 2003.
3. Yechout, Thomas R., *Introduction to Aircraft Flight Mechanics*, 2<sup>nd</sup> Edition, AIAA Education Series, 2014