AOE 3134 Stability and Control

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Text: Etkin and Reid, *"Dynamics of Flight, Stability and Control,"*
John Wiley, 1996

Grading:
Tests	2.5
Homework	1.5
Final	2
Total	6

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Ground Rules: Students consult each other when doing homework, however the final effort must be individual. Essentially you can discuss methods of approach etc. but the calculations must be done independently. Likewise with any computer assignments.

Syllabus

1. Equilibrium Flight
   a) Force balance
   b) Moment balance
   c) Static Stability

2. Static Stability
   a) Longitudinal stability
      i) Estimating aerodynamic properties
      ii) Estimating static stability characteristics
   b) Lateral-Directional stability
      i) Estimating aerodynamic properties
      ii) Estimating static stability characteristics

3. Control Surfaces
   a) Estimating control effectiveness
   b) Control deflections required for flight
   c) Hinge moments
   d) Estimating stick forces and stick force gradients

4. Equations of Motion & Axis Systems
   a) Axis Systems & Transformations
   b) Force Equations (generic)
   c) Moment equations (generic)

5. Dynamic stability
   a) Longitudinal equations of motion
      i) Small disturbance equations of motion
      ii) Linearized aerodynamic representation
   b) Longitudinal linear equations of motion
      i) Linear system analysis review
      ii) Phugoid and Short Period motions
   c) Lateral-Directional equations of motion
      i) Small disturbance equations of motion
      ii) Dutch Roll, Rolling Convergence and Spiral motions

6. Flying Qualities Discussion