- **Course Number and Title:** A E 364. Flight Dynamics and Controls
- **Catalog Description:** Fundamentals of airplane flight dynamics, static trim, and stability; spacecraft and missile 6 degrees of freedom dynamics; attitude control of spacecraft
- **Credit Hours:** 3 Credits (3)
- **Prerequisite(s) / Corequisite(s)** Prerequisite(s): M E 228, ENGR 234, M E 261
  Corequisite(s): None
- **Required:** Required for BSAE Degree
- **Course Availability:** Fall Semester Only
- **Instructor (Usual):** Dr. Young S. Lee (See https://mae.nmsu.edu/people/faculty.html)
- **Textbook:**
  1. Anderson, Jr., J.D. and Bowden, M., Introduction to Flight, 9th Ed., McGraw-Hill, 2022; ISBN-10: 1260226743 or ISBN-13: 978-1260226744.
  2. Nelson, R.C., Flight Stability and Automatic Control, 2nd Ed., McGraw-Hill, 1997; ISBN-10: 0070462739 or ISBN-13: 978-0070462731.
- **Course Learning Objectives:**

  After completing this course, a student should be able to:

  1) Evaluate static and dynamic flight performance.
  2) Understand static stability design for longitudinal / lateral/directional flights.
  3) Use the 6-degree-of-freedom, rigid body equations of motion of aircraft.
  4) Evaluate longitudinal/lateral/directional dynamic stabilities of aircraft.
- **Topics Covered:**
  - Static flight performance: Thrust / power required / available, maximum flight speed, rate / time of climb, gliding performance, service / absolute ceiling, and flight range and endurance
  - Dynamics flight performance: Take-off, landing, turning flights and V-n diagram, and accelerated rate of climb
  - Static stability of longitudinal / directional / lateral motions and their controls
  - Fundamentals of dynamic stability and longitudinal / lateral approximations: Phugoid/short-period modes, and lateral/directional Spiral/rolling/Dutch-roll modes