

The University of Texas at El Paso
College of
Department of
Syllabus

Course Prefix and Number: AERO 4311

Course Title: Flight Dynamics and Controls

Credit Hours: 3

Prerequisite Courses: AERO 3343 and AERO 3312

Course Description: The course will deliver fundamentals on aircraft flight dynamics, including rotational, linear and nonlinear. The course will also include stability analysis and control design using classical and modern techniques. Besides, the course will use computer simulations to validate the theoretical developments.

Learning Outcomes: Upon completion of this course, students will be able to: derive the equations of motion of aircraft, including aerodynamics forces and moments; design feedback controllers using classical and modern approaches; and simulate and test the aircraft dynamics and control algorithms in a simulation environment.

Required Materials:

-Textbooks:

- Durham, Wayne. Aircraft flight dynamics and control. John Wiley & Sons, 2013.
- Vepa, Ranjan. Flight Dynamics, Simulation, and Control: For Rigid and Flexible Aircraft. CRC Press, 2014.

-Laptop

Course Schedule:

- Rotational Dynamics
- Aerodynamic Forces and Moments
- Nonlinear Flight Dynamics
- Flight Dynamics Linearization
- Aircraft Stability
- Aircraft Classical Feedback Control
- Aircraft Modern Feedback Control