THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Advanced Flight Mechanics

AEROENG 7721

Credit Hours:
3.00

Course Levels:
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Advanced elements of flight mechanics across the entire Mach range including access-to-space and atmospheric reentry

Prerequisites and Co-requisites:
Grad standing in aerospace or mechanical engineering or permission of instructor

Course Goals / Objectives:
- Develop a more fundamental knowledge of mechanics of flight including nonlinear effects, model reduction, and avionics

Course Topics:
- Overview of aircraft aerodynamics throughout all Mach ranges
- Overview of aircraft propulsion including electrification
- Overview of aircraft performance including access-to-space and atmospheric reentry
- Review of static stability and trim
- Aircraft maneuverability and review of flight control systems
- Aircraft handling qualities and control responses; flight simulations
- Avionic and navigation systems
- Adaptive flight maneuvering
- Model reduction methods including best practices in wind tunnel testing
- Model Reduction and Actuator and sensor placement in flexible structure control
- Best practices in flight testing including actuator and sensor placement

Designation:
Elective