



Advanced Aerodynamics

AEROENG 6560

Credit Hours:

3.00

Course Levels:

Graduate (5000-8000 level)

Course Components:

Lecture

Course Description:

Advanced elements of aerodynamics across the entire Mach range.

Prerequisites and Co-requisites:

Graduate standing in mechanical engineering or aerospace engineering or by permission of instructor.

Course Goals / Objectives:

- Students will develop fundamental knowledge of aerodynamics across the entire Mach number range.
 - Students will understand and use fundamental tools for the analysis and design involved in aerodynamics across the entire Mach number range.
 - Students will understand and develop advanced numerical analysis techniques involved in aerodynamics.
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Course Topics:

- Review of linearized theory and similarity
 - Airfoil characteristics
 - Extreme flight conditions; high altitude, high angles-of-attack
 - Transonic drag rise and lift characteristics
 - Supersonic lift and drag characteristics; area ruling; slender-body theory
 - Hypersonic lift and drag characteristics, configurations
 - Numerical procedures in aerodynamics
 - Applications of computational fluid dynamics
 - Best practices in wind tunnel testing, data acquisition
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Designation:

Elective