THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Experimental Fluid Mechanics

AEROENG 6860

Credit Hours:
3.00 - 3.00

Course Levels:
Graduate (5000-8000 level)

Course Components:
Lecture
Lab

Course Description:
Introduction to experiment planning, data acquisition and analysis, and advanced measurement techniques commonly employed in fluid dynamics research.

Prerequisites and Co-requisites:
Prereq: Grad standing in Mechanical or Aerospace Engineering, or permission of instructor.

Course Goals / Objectives:
- Demonstrate ability to conduct a thorough literature search and relate one?s own work to a body of existing knowledge
- Understand and appropriately use uncertainty analysis for experiment planning, data analysis, and reporting
- Engage in critical thought necessary for proper design and conduct of an experimental investigation
- Develop a general awareness of the various basic and advanced measurement techniques available for experimentation. Understand the capabilities, strengths, and limitations of each technique
- Become intimately acquainted with the details of at least one advanced measurement technique. Demonstrate familiarity through a thorough literature review and/or experimental project

Course Topics:

- Introduction and Literature Search
- Experiment Planning, Overview of Wind Tunnels
- Wind Tunnel Design
- Wind Tunnel Boundary Correction Methods
- Uncertainty Analysis
- System Response
- Signal Conditioning, Digital Data Acquisition, Data Analysis
- Project Proposal Presentations
- Schlieren, Shadowgraph, Interferometry
- Force Balances and Sting Mounts
- Pressure Measurement - conventional and advanced techniques
- Velocity Measurement - conventional and advanced techniques
- Wall Shear Stress
- Final Project Presentations

Designation:

Elective