EAS4810C Aerospace Sciences Lab and Design
(multiple sections)
Lecture Location: CSE E119
Lecture Times: T, R Period 2 (8:30 am – 9:20 am)
Lab Location: NEB 0111
Lab Times vary by section
Academic Term: Fall 2025
It may become necessary to modify this syllabus during the semester.
In this event, students will be notified, and the revised syllabus will be posted on the course web site.

Instructor:
Bruce Carroll
Room 131 NEB
bfc@ufl.edu
352-392-4943 (office)
Office Hours: MWF TBD (held via Zoom**.)**
You can always contact the instructor to arrange Zoom meetings at other times.

Course Description
Experimental investigations of aerospace engineering systems. Wind tunnel testing. Design project with experimental validation. Credits: 3

Course Pre-Requisites / Co-Requisites
EAS4101 and EAS4132 and EML3301C

Materials and Supply Fees
Material & Supply Fee: $36.28; Equipment Fee: $75.26

Course Objectives
At the end of the course, the student will be proficient with a variety of experimental techniques, including pressure measurements, pressure scanners, temperature measurements, load balances, and hot film anemometry. The student will be able to plan, execute, and interpret results from experimental investigations in a low speed wind tunnel. The objectives will be achieved through:

- Class lectures and examples
- Group project
- Student preparation for and completion of experiments and reports

Professional Component (ABET):
This course prepares graduates to have a knowledge of aerodynamics and to have design competence that integrates aeronautical topics.

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1) An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	High
2) An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	High
3) an ability to communicate effectively with a range of audiences	High
4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	Low
5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	High
6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	High
7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies	High

*Coverage is given as high, medium, or low. An empty box indicates outcome not significantly addressed by this course.

Required Textbooks and Software
No required textbook. Materials prepared by the instructor are provided to the students. Software used is public domain.

Additional Recommended Materials
- *Low-Speed Wind Tunnel Testing*, Barlow, J.B., Rae, W. H., and Pope, A., John Wiley & Sons, New York, 3rd Edition, 1999.

Required Computer:
It is important that you have your own computer. Details are provided on both the department and college websites:
- https://www.eng.ufl.edu/students/resources/computer-requirements/
- https://mae.ufl.edu/academics/prospective/undergraduate/computer-requirements/

Course Schedule
- See table at end of syllabus.

Attendance Policy, Class Expectations, and Make-Up Policy
Regular class attendance is mandatory. Late HW and makeup exams are only allowed for students with documented circumstances consistent with UF policy. Excused absences must be consistent with university policies in the undergraduate catalog and require appropriate documentation. For more information on UF policies see https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Evaluation of Grades

There will be six lab reports during the semester. Some will be individual reports and some will be group reports. An experimental design/implementation project occurs at the end of the semester. Participation grade is related to attendance, in class quizzes, and in class group work.

Assignment	Percentage of Final Grade
Lab Reports	60%
Project	20%
Participation	20%
	100%

Grading Policy

Percent	Grade	Grade Points
94 to 100	A	4.00
<94 to 90	A-	3.67
<90 to 87	B+	3.33
<87 to 84	B	3.00
<84 to 80	B-	2.67
<80 to 77	C+	2.33
<77 to 74	C	2.00
<74 to 70	C-	1.67
<70 to 67	D+	1.33
<67 to 64	D	1.00
<64 to 61	D-	0.67
<61 to 0	E	0.00

Academic Policies & Resources
To support consistent and accessible communication of university-wide student resources, instructors must include this link to academic policies and campus resources: https://go.ufl.edu/syllabuspolicies. Instructor-specific guidelines for courses must accommodate these policies.

Commitment to a Positive Learning Environment
The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values.

If you feel like your performance in class is being impacted, please contact your instructor or any of the following:
• Your academic advisor or Undergraduate Coordinator
• HWCOE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
• Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu

Aerospace Sciences Lab Schedule – Fall 2025 - Tentative

Week	Tues Lecture	Thurs Lecture	Lab	Submit
1		8/21 Introduction, expectations, safety, etc.	No Lab This Week	
2	8/26 Wind tunnel types & design, Intro to pressure measurements	8/28 Lab 1 Overview	Orientation, Pressure Transducer Calibration Practice	
3	9/2 Lab 1 In Class Group Work	9/4 Overview for Lab 2	Lab 1: Wind Tunnel Calibration	Orientation Quiz (Due Tuesday 9/2 at 11:59 pm)
4	9/9 Lab 2 In Class Group Work	9/11 Hotwire/Time Series Analysis	Lab 2: Pressure on a Cylinder	Lab 1 Report (Due Tuesday 9/9 at 11:59 pm)
5	9/16 Spectral Analysis	9/18 Overview for Lab 3		
6	9/23 Lab 3 In Class Group Work	9/25 Xfoil	Lab 3: Cylinder Wake Measurements	Lab 2 Report (Due Tuesday 9/23 at 11:59 pm)
7	9/30 Balance Measurements	10/2 Overview for Lab 4		
8	10/7 Lab 4 In Class Group Work	10/9 Tunnel Boundary Corrections	Lab 4: Balance Measurements	Lab 3 Report (Due Tuesday 10/7 at 11:59 pm)
9	10/14 Integration of Aerodynamic Loads	10/16 Overview for Lab 5		
10	10/21 Lab 5 In Class Group Work	10/23 Compressible Flow Overview, Optical Measurements	Lab: 5 Aerodynamic Forces on Wings	Lab 4 Report (Due Tuesday 10/21 at 11:59 pm)
11	11/4 Overview for Lab 6	11/6 Lab 6 In Class Group Work		
12	11/11 Holiday	11/13 Project Group Work	Lab 6: Tank Discharge	Lab 5 Report (Due Tuesday 11/11 at 11:59 pm)
13	11/18 Project Group Work	11/20 Project Group Work		Lab 6 Report (Due Tuesday 11/18 at 11:59 pm)
14	11/25 Holiday	11/27 Holiday		
15	12/3 Project Group Work	No Class		Project Report (Due Wednesday 12/3 at 11:59 pm)
16	No Final Exam			