

AE 3182 - Aerodynamics and Fluids Laboratory Spring 2014, ELB126

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Course Prerequisites:

"C" or better in MAE 2381; MAE 3303 (or concurrent enrollment)

Required Readings/Materials:

Recommended, non mandatory text:

Low-Speed Wind Tunnel Testing,[J. B. Barlow, W. H. Rae, A. Pope]

Other references:

High-Speed Wind Tunnel Testing,[A. Pope, K. L. Goin]

Course notes

Posted on Blackboard

Lab manual

Posted on Blackboard

Course Description:

Wind tunnel experiments to study flow phenomena of aerodynamic interest (spanning from low subsonic to supersonic regimes), including boundary-layer surveys, testing of airfoils, wings, and aircraft.

Course Learning Goals/Objectives:

The objective of this course is to apply and extend the theoretical knowledge acquired by the student in previous courses to selected laboratory experiences centered on experimental aerodynamics. The design of the experiment (models, flow regime, instrumentation, and data acquisition) as well as the interpretation of the results will require a critical analysis of the assumptions and simplifications used in deriving the theoretical models allowing the student to mature a competent understanding of their validity range and application.

14. Attendance and Drop Policy:

Attendance is required.

15. Tentative Schedule (course content):

The Lab is centered on the selected experimental experiences shown below and for each module a comprehensive review of the fundamental will precede the experimental activity.

Labs and tests tentative chronology

- 1 Wind Tunnel Calibration (ELB 126)
- 2 BL survey (ELB 126)
- 3 Verizee Model Stability test (ELB 125)
- 4 **test 1**
- 5 Shock tube lab (ARC)
- 6 Free-jet lab (ARC)
- 7 Finite wing (ELB 126)
- 8 **Test 2**

Specific Course Requirements with descriptions

Examinations:

2 mid-term exams

Final Examination:

No final exam.

Other Graded Assignments (Homework / Projects / Labs / Research Papers):

Missed labs are subjected to tardiness policy – 10% per day. Labs that are copied will receive a score of zero and the student will be indicated to the disciplinary committee. No makeup exams unless arrangements are made in advance.

Grading Format Weighting / Point Value of Assignments and Examinations:

Labs: 80%, 2 Quizzes: 10 % each.

(Grading Scheme: A: 90-100%; B: 80-89%; C: 70-79%; D: 60-69%; F: <60%)

Americans with Disabilities Act:

The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 93112 --The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans With Disabilities Act -(ADA), pursuant to section 504 of The Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens. As a faculty member, I am required by law to provide "reasonable accommodation" to students with disabilities, so as not to discriminate on the

basis of that disability. Student responsibility primarily rests with informing faculty at the beginning of the semester and in providing authorized documentation through designated administrative channels.

Academic Dishonesty:

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Student Support Services Available:

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