AE 343: Aerodynamic laboratory
Introductory briefing

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Experiments and Instructors

- Planar jet flow – Aniruddha Sinha

  TAs: Raghavendra K. H., Naveed Rahman Saikia, Saurabh Pawar

- Flow past airfoil – Vineeth Nair

  TAs: Ashutosh Narayan Singh, Haribalan S., Kavi Kumar K.

- Shock tube - Viren Menezes

  TAs: Pooja Nandan Gajbiye, Sujan D. Silva

Course plan

1. All three experiments will run on Tuesdays and Fridays
2. You will be assigned to twelve groups of 6-7 students each. You have to note your batch (B1, B2, B3), Division (D1, D2), and group (G1, G2)
3. Each experiment would require you to
   - collect
   - process
   - analyze
   - report on
   - present, and
   - defend (the analysis of data) in viva

Course plan

4. Students will learn about the experiments by attending all the
   - Initial briefings held prior to the experiments
   - Material uploaded on the course Moodle page by instructors and TAs
   - Performing the experiments and preparing the report
   - Final presentations and viva-voce exams

5. You may meet the instructors outside the lab hours through prior appointment to clarify and questions that you have about the experiments

Evaluation

Component	Weight (%)
Participation (all classes)	25
Lab reports (3 Nos.)	45
Presentation	15
Viva	15

Evaluation will be held at the end of the semester

Experiment Matrix

Experiment Matrix						
	D1			D2		
Week	B1	B2	B3	B1	B2	B3
1	E1	E2	E3			
2				E1	E2	E3
3	E1	E2	E3			
4				E1	E2	E3
5	E2	E3	E1			
6				E2	E3	E1
7	E2	E3	E1			
8				E2	E3	E1
9	E3	E1	E2			
10				E3	E1	E2
11	E3	E1	E2			
12				E3	E1	E2

G1 group performs experiments on Tuesdays
G2 group performs experiments on Fridays

Experiment Tag	
E1	Planar jet
E2	Airfoil
E3	Shock Tube

Lab reports (guidance)

1. Each student must submit a professional and scientific Laboratory Report within one week of completion of the experiment as per timetable
2. Recognize that writing is a process that develops from the practice of writing draft and revision copies to produce a final polished report
3. The report should clearly document the following aspects in separate well-crafted sections that fit into a logically coherent whole
    - objective(s)
    - theory
    - apparatus and methods
    - data presentation and analysis
    - discussion
    - references and supplemental information

Lab reports (guidance)

4. Develop a concise scientific writing style that is suitable for publication by practice and example from the literature
5. Perform a statistical analysis of your results and calculate confidence limits to describe the precision and accuracy of your results
6. Compare and contrast your results with published results and use sound scientific principles to justify differences or support agreement
7. Prepare reports using a word processor and use a spell checker
8. Prepare proper scientific tables, figures and charts using a spreadsheet (**Do not use curve-fitting mindlessly without reference to the physics!**)
9. Use drawing programs like `ipe' (https://ipe.otfried.org/) to draw relevant figures; import these into your report with high resolution
10. Communicate with TAs/instructors for feedback on how to improve

Lab reports (evaluation)

1. Each lab report will account for 15 points in the final evaluation
2. Delay in submission of a report (i.e., any time after the deadline will incur 50% penalty on that report. However, delay in submission by more than 1 week from the deadline will incur 100% penalty on that report
3. The lab reports will be assessed for plagiarism -- any sign of plagiarism will incur 100% penalty on all parties involved
4. We will grade, return and discuss the reports of an experiment within 1 week of submission so that you can incorporate the feedback in the presentation and viva

Presentation and viva voce

During and after the presentation, the student will be quizzed on

- Understanding of the theoretical and practical principles involved in the experiment chosen for presentation,
- Ability to grasp the implication of the corresponding data analyzed
- Ability to defend the analysis presented, and
- Overall awareness of and curiosity about the lab proceedings