Course Syllabus

Course Information

ME 3115.101 - 106 – Fluid Mechanics Lab – Fall 2018
Room: ECSW 2.315
Time: 106: M 10:00-12:45; 105&101: F 10:00-12:45, 1:00-4:45pm; 102: 4:00-6:45 pm; 103&104: T 4:00-6:45 pm, Th 4:00-6:45 pm.
Final: replaced with reports

Professor Contact Information

Prof. Hui Ouyang
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Office Hours:
Wed., Thur. 1 pm – 2 pm & Fri. 9:00am – 10:00am

TA

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Course Pre-requisites, Co-requisites, and/or Other Restrictions

Pre or Corequisite: MECH 3315

Course Description

MECH 3315 Fluid Mechanics Laboratory (1 semester hour) is a project-based course associated with MECH 3315. Internal flows through pipelines, viasualization of turbulence, wind tunnel calibration and survey, wind tunnel turbulence tests, boundary layer on a flat plate, static stability, and other empirical fluid mechanics will be the contents of the course.

Student Learning Objectives/Outcomes

At the completion of this course, students are expected to have achieved the following objectives:
Demonstrate fluid mechanics principles by experiments.
Design and perform experiments to measure characteristics of fluid flows.
Function as a team to conduct and report a series of experiments.

Required Textbooks and Materials

Lab Manuals (eLearning)

Suggested Course Materials

None

Assignments & Academic Calendar

(Topics, Reading Assignments, Due Dates, Exam Dates)

All students will work in groups of 3. During the course of the semester they will perform a set of six pre-determined experiments on fluid mechanics and one more experiment of their choice.

Schedule –

Week 1 - No lab. Reading and review your fluid mechanics material.

Week 2 - Course introduction, group assignment, quick quiz

Week 3 - Perform experiment 1

Week 4 - Perform experiment 2

Week 5 - No lab.

Week 6 - Perform experiment 3, reports 1 and 2 due at lab time

Week 7 - Perform experiment 4, Final project guidelines

Week 8 - No lab

Week 9 - Perform experiment 5, reports 3 and 4 due at lab time

Week 10 - Perform experiment 6, one-page project summary due at lab time (email submission)

Week 11 - No lab

Week 12 - Perform final experiments Reports 5 and 6 due at lab time

Week 13-15 - Perform final experiments at scheduled time

Week 16 – Final report due (email submission) by 5pm Friday, 12/7

Standard Reports - Students will conduct six experiments on hydrostatics, inviscid flow, transition between laminar and turbulent flows, and so forth. The objectives of each experiment as well as the format of the reports will be given by the TA. The goal of these experiments is to obtain direct experience on multiple important flows and learn to use (and understand the rationale of) various tools to evaluate such flows.

Final Project – bring up one experiment whose significance you can justify. For example, you can compare the terminal speeds of a small steel ball and a streamlined object falling in i) a highly viscous liquid and ii) water. You can use the result to discuss the effect of Reynolds number on which drag mechanism is dominant.

Peer Evaluation – Your contribution to the team will be evaluated by your team-mates, so be responsible and nice to each other ☺

Grading Policy

Attendance 20%

Reports 80% (60% from six standard reports and 20% from the final project)

Team members will receive the same score for a report, but a student that has not contributed to any specific report will miss the score for that report. Participation of team member should be clarified in each report.

Peer evaluation does not directly contribute to the raw score, but will be used to adjust the letter grade of the student. Exceptionally negative reviews can lead to the discount by up to one full letter grades (e.g., A0 → B0)

All reports must be typed.

Students from different groups are welcome to discuss on experiments, but each group should write their own report independently. **This course takes plagiarism seriously, and copying others' work will lead to zero point for the report (at least) or to the failure of the course.**

Course & Instructor Policies

(make-up exams, extra credit, late work, special assignments, class attendance, classroom citizenship, etc.)

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.