MEEN 3240
MEE Lab I

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Course Objectives

This course is designed for third-year mechanical and energy engineering students to enable mastery of basic experimental skills in the thermal-fluid sciences. Students are expected to demonstrate capability of performing various levels of engineering measurements with reasonable accuracy.

The lab course covers the following topics:

Category I: Basic knowledge in experimental techniques and data analysis
Category II: Thermal science and heat transfer
Category III: Fluid mechanics
Category IV: Optics for mechanical engineers

Course Learning Outcomes (CLO):

Upon successful completion of this course, students will able to:

1) Ability to perform statistical error analysis of experimental data
2) Understanding measurements of transport properties
3) Understanding temperature measurements
4) Ability to design and construct mechanical engineering experiment
5) Understanding basic electrical measurement techniques
6) Concepts of the First Law of Thermodynamics
7) Understanding basic optical arrangements for mechanical engineering experiments
8) Ability to present and report scientific data
9) Ability to control thermal science experiments

CLO	ABET Student Outcomes (SO)										
	SO1	SO2	SO3	SO4	SO5	SO6	SO7	SO8	SO9	SO10	SO11
1	x	x									
2	x	x			x						x
3		x			x						
4		x									x
5		x			x					x	x
6	x	x			x						
7		x			x						
8							x				
9					x						x

Lecture Hours and Place

Mon 11:00 AM-11:50 AM;
Session 1: NTDP B190. Session 2: NTDP B192

Lab Hours and Place
NTDP F102D.1
Tue 9:30am-12:20pm; Wed 12:00pm-2:50pm; Wed 3:30pm-6:20pm; Thur 2:00pm-4:50pm

Office Hours
Dr. Xu Nie: Tuesday, Thursday: 1:00-2:00 pm
Dr. Xiaohua Li: Wednesday: 2:00-4:00 pm

Required Textbook
J. P. Holman, *Experimental Methods for Engineers*, 7th (or 8th) edition

Prerequisites
MEEN2210 and MATH3410/3310 (or consent of instructor)

Organization
Groups of five (or six) students will work together on 11 experiments. A teaching assistant will be available during the lab exercises.

Class attendance
Class attendance is mandatory. Missing the class more than two times without any prior notice (except for emergency) will result in **INCOMPLETE** grade. Inability to attend class must be justified before or after the class with a proper document or any other means (i.e., medical records in case you have to see the doctor). **Make-up exams will only be given to students who missed an exam with valid excuses (for instances: medical emergency of him/herself or close relatives, with valid hospital records or doctor's note)**

Lab participation
All students must perform all lab exercises. Lab participation in the designated week is strongly encouraged. Incomplete lab experiments will reflect the final grade such as **INCOMPLETE** grade. Lab participation is evaluated according to grading policy. Lab participation does not merely mean that you should be present at the assigned lab time. You should actively participate and show your understanding to the assigned TA. The lab participation will be measured by **pre-reports** that should be submitted before the lab. Each student should submit acquired data, figures if possible and necessary, and answers to short questions presented at the end of lab manuals.

Grading

Lab participation (10%)	>85% A
Lab reports (60%)	70-84.9% B
Midterm (15%)	55-69.9% C
Final (15%)	40-54.9% D
	40% F

Lab Reports
All students must submit two formal reports (30% of your final grade) and five informal reports (30% of your final grade). The content of formal reports is composed of abstract, introduction, background and theory, experimental apparatus and procedures, experimental results and discussion, conclusions, and bibliography (appendices can be added at the end of the report). The details of writing reports will be introduced in the first day of lecture. **All lab reports**

should be submitted by the due date indicated in the course outline and schedule. No late submission is accepted. Sample reports are available on the class website.

Other Policies

1. ALL students MUST use official UNT email address for correspondence. Any class announcement and communication will be sent to the email address that the students provided on myUNT (my.unt.edu). If you prefer to use other email address, it is YOUR responsibility to set up forwarding service on myUNT so that any class-related emails will be sent to your preferred email account(s).
2. It is the responsibility of students with certified disabilities to provide the instructor with the appropriate documentations;
3. Dishonesty (such as copying homework and cheating in the exams) will be handled as per the school policy;
4. Any questions regarding the grading discrepancy should be brought up within a week of returning the test or lab reports.

Course outlines and schedules: See Blackboard