

Instructor: Dr. Hassan Qandil	
Office: F102C	Email: hassanqandil@my.unt.edu
Lecture Times and Locations:	(Section-1: M 02:30 p.m.-03:20 p.m.) > Room: B140 (Section-2: F 09:00 a.m.-09:50 a.m.) > Room: F175
Instructor Office Hours:	MW 11:30 a.m.-12:30 p.m. & TTh 12:00 p.m.-01:00 p.m.
Pre/co-requisites:	MEEN 2210; MATH 3410; MEEN 2110
Lab Location:	F158 MEE undergraduate Teaching Lab
Experiments' Manual:	Uploaded to CANVAS One-by-One (PRINT A HARD COPY)
Reference Textbook:	Experimental Methods for Engineers, 8 th ed (or 7 th ed) J. P. Holman (ISBN: 978-0-07-352930-1)

TA's: (Office Hours Th 1:30 - 3:30 pm and Monday 9:00 – 10:00 am @ D206A)

Madasani, Ravichandra	RavichandraMadasani@my.unt.edu	Phone: (618)-303-9560
Amaral, Pietra	pietraamaral@my.unt.edu	Phone: (956) 231-3289
Shivaji, Kailash Chandra Shivaji	chandrashivpaturi@my.unt.edu	Phone: (510)-283-1183
Parker, Payton	paytonparker@my.unt.edu	Phone: (817)-403-6368

Lab Sessions:

Day	Time	Group Number	Course Code	TA
Tuesday	9:30-11:00	1, 2	3240-301	Ravichandra, Payton
	11:00-12:30	3		Payton
Tuesday	12:30-2:00	4, 5	3240-306	Pietra, Payton
	2:00-3:30	6		Pietra
Tuesday	3:30-5:00	7, 8	3240-307	Pietra, Payton
Wednesday	12:30-2:00	9, 10	3240-302	Payton
	2:00-3:30	11		Ravichandra
Wednesday	3:30-5:00	12, 13	3240-303	Ravichandra
	5:00-6:30	14		Ravichandra
Thursday	11:00-12:30	15	3240-308	Ravichandra
Thursday	2:30-4:00	16, 17	3240-304	Ravichandra
Friday	3:30-5:00	18, 19	3240-305	Pietra
	5:00-6:30	20		Pietra

Course Description:

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 measurements and data analysis

Category II: Thermodynamics and heat transfer

Category III: Fluid mechanics

Category IV: Renewable Energy

MEEN 3240 Course Learning Outcomes	ABET EAC Student Outcomes						
	1	2	3	4	5	6	7
Demonstrate ability to perform statistical error analysis of experimental data.	X					X	
Demonstrate understanding measurements of transport properties.	X					X	
Demonstrate understanding of temperature measurements.	X					X	
Demonstrate understanding basic electrical measurement.	X					X	
Demonstrate ability to design and construct mechanical engineering experiments.	X					X	
Demonstrate understanding of concepts of the First Law of Thermodynamics.	X					X	
Demonstrate understanding fundamentals of energy and power estimation for both solar and wind.	X					X	
Demonstrate ability to present and report scientific data.			X	X	X	X	
Demonstrate ability to control thermal science experiments.						X	

Grades: Lab Reports	50%	≥ 90%	A
Lecture Attendance	10%	80-89.9%	B
Midterm (labs 1-4)	20%	70-79.9%	C
Final (labs 5-9)	20%	60- 69.9%	D
Total	100%	< 60%	F

Reports: Two (and BOTH) Submissions are required

- **Submission #1: PDF Electronic format to CANVAS.** Each student should upload his/her group report in one single PDF document.
- **Submission #2: hardcopy to session TA.** Submit a **hard copy** of your lab report to your session TA **on the due day before your new lab session starts.**

NO LATE LAB REPORTS WILL BE COLLECTED

A **Template** for lab report in MS Word format has been posted in Blackboard. **Download and use the template DIRECTLY.** Convert your report to PDF before submitting (this is for submission #1).

Due days for lab reports (also definition of “late” lab reports): if not otherwise stated, lab reports will due EXACTLY one week after your lab session. For example, if your group lab session is Thursday, 11:00 a.m.-12:20 p.m., this means you will do your experiment on every Thursday 11:00 a.m.-12:20 p.m. Therefore, your lab report will due next Thursday 11:00 a.m., before the new experiment starts. In this case, lab report turned in after 11:00 a.m. Thursday will be considered as “late” and will not be collected.

Lecture attendance:

Lecture attendance is mandatory; attendance sheet will be provided and collected for each individual lecture. Lecture attendance will contribute 10% to your final grade.

Lab attendance:

Lab attendance is mandatory; a group picture in front of the lab equipment on the experiment day is required. This group picture should be included in your lab report as appendix and will be used to check the lab attendance. Lab attendance will be incorporated in your peer evaluation score.

Teamwork:

Each group should consist of 5 students. Once the group is formed, students will have to stay in the same group and may NOT change group for the entire semester.

By definition, a group must have more than one individual. Anyone unwilling or unable to work in a group with multiple other individuals will receive an 'F' in MEEN 3242. **Reports submitted by individuals will not be graded.**

Peer Evaluation:

A peer evaluation will be performed for any individual experiment if any group member requests such a peer evaluation. Each group member will evaluate the **lab performances** and **report contributions** of other members in the same group anonymously by a scale of 0-100%. 100% means a good job on the assigned part of work while 0% means completely no contribution to the lab and the report. Results of peer evaluation should be sealed in an envelope and turned in to the instructor or TA. The **(average percentage)* (group lab report score)** will be the score of that particular student for that particular lab report.

For example, we assign max 100 points for each lab report, and the score for one group report is 94; Suppose one student received an average peer evaluation of 50%, then this individual student will receive a credit of $94 * 50\% = 47$ points for that particular lab report.

Exam:

- (1) **Exams are closed book and closed notes with formula sheets provided by the instructor.**
- (2) **There will be NO make-up exam. Exceptions:** medical emergency (student and important ones), transportation/traffic emergency; religious holidays/duty, jury duty and military duty. **Documentary evidences** must be submitted.

Disability Accommodations: If you need academic accommodations for disability you must have document which verifies the disability and makes you eligible for accommodations, then you can schedule an appointment with the instructor to make appropriate arrangements.

Academic Dishonesty: There is a zero tolerance policy. Cheating of whatsoever will result in an automatic 'F' in this course and the matter will be turned over to the appropriate student disciplinary committee.

Professionalism: One of the goals of this course is to teach students about professionalism, including the standards and expected behavior of your chosen profession. With this in mind, students are expected to demonstrate a behavior consistent with the conduct of an individual practicing in the engineering profession. Students are expected to: (1) come prepared for class; (2) respect faculty and peers; (3) demonstrate responsibility and accountability for your own actions; (4) sensitivity and appreciation for diverse cultures, backgrounds, and life experiences; (5) offer and accepts constructive criticism in a productive manner; (6) demonstrate an attitude that fosters professional behavior among peers and faculty; (7) be punctual to class meetings; (8) maintain a good work ethic and integrity; and (9) recognize the classroom as a professional workplace.

Classroom Inclusivity Statement: I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

MEEN 3240.001 MEE Lab I Schedule Overview (Subject to change)

Week	Dates	Lecture Topics (In class)	Lab Activity (In Lab)	Reports Due (In Lab and Online)
#1	Aug. 26 th – Aug. 30 th	Overview of Syllabus, Lab Report Format	Team up	No report
#2	Sept 2 nd – Sept. 6 th	Labor Day Week (No Lectures or Labs)		
#3	Sept. 9 th – Sept. 13 th	Lecture 1: Measuring Properties of unknown Materials; Uncertainty Propagation	No Lab	No report
#4	Sept. 16 th – Sept. 20 rd	Lecture 2: Viscosity	Experiment #1: Measuring Properties of unknown Materials; Uncertainty Propagation	No report
#5	Sept. 23 rd – Sept. 27 th	Lecture 3: Thermodynamic Processes	Experiment #2: Viscosity	Experiment #1: Measuring Properties of unknown Materials; Uncertainty Propagation
#6	Sept. 30 th – Oct. 4 th	Lecture 4: Solar Panel Efficiency	Experiment #3: Thermodynamic Processes	Experiment #2: Viscosity
#7	Oct. 7 th – Oct.11 th	Lecture 5: Wind Turbine Efficiency	Experiment #4: Solar Panel Efficiency	Experiment #3: Thermodynamic Processes
#8	Oct. 14 th – Oct. 18 th	Midterm Week (No Lectures or Labs) (Midterm material: Lecture 1-4 and Experiments 1-4) Section 1: October 14th Monday Section 2: October 18th Friday		
#9	Oct. 21 st - Oct. 25 th	Lecture 6: Temperature Sensor Construction and Calibration	Experiment #5: Wind Turbine Efficiency	Experiment #4: Solar Panel Efficiency
#10	Oct. 28 th – Nov 1 st	Lecture 7: Calorimetry	Experiment #6: Temperature Sensor Construction and Calibration	Experiment #5: Wind Turbine Efficiency
#11	Nov. 4 th – Nov. 8 th	Lecture 8: Characteristic behavior of a two phase fluid	Experiment #7: Calorimetry	Experiment #6: Temperature Sensor Construction and Calibration
#12	Nov. 11 th – Nov. 15 th	No Lecture	Experiment #8: Characteristic behavior of a two phase fluid	Experiment #7: Calorimetry
#13	Nov. 18 th – Nov. 22 nd	No Lecture	No Lab	Experiment #8: Characteristic behavior of a two phase fluid
		Finals (material: Lecture 5-8 and Experiments 5-8) in same classroom Section 1: November 18th Monday Section 2: November 22nd Friday		