

Instructor: Ramesh Shrestha **Office:** NTDP F102 E
Phone: 940-390-9183 **Email:** rameshshrestha@my.unt.edu
Office Hours: Open Office Policy. W/TH, 3:30 PM-5:00 PM
Lecture Time/Location: Wednesday 10:30-11:20AM; room D215 (MEEN 3242.002)
Wednesday 2:30-3:20 PM; room B140 (MEEN 3242.001)
Lab Location: F158 MEE undergraduate Teaching Lab
TA: Yuqi Jin, Eunho Cha, Pradeep Magadum, Sanford Siegel.

Lab Sessions

- (1) Monday:
- a. 9:00 – 11:50 am
 - b. 12:00 – 2:50 pm
 - c. 3:30 – 6:20 pm
- (2) Wednesday:
- a. 9:30 – 12:20 pm
- (3) Thursday:
- a. 8:00 – 10:50 am (Group #1: 8:00-9:20; Group #2:9:30-10:50)
 - b. 11:00 – 1:50 pm
 - c. 5:30 – 8:20 pm
- (4) Friday:
- a. 9:00 – 11:50 am
 - b. 12:00 – 2:50 pm

Experimental Manual: uploaded to Blackboard, please download and print a copy

Reference Textbook: Experimental Methods for Engineers, 8th ed (or 7th ed)
J. P. Holman (ISBN: 978-0-07-352930-1)

Course Description:

A continuation of MEEN 3240, MEE Lab I, covers principles of experimentation. Students perform a series of experiments in key areas of fluid mechanics and heat transfer. Experiments will cover flow velocity measurement, flow across a circular cylinder, drag force measurement and velocity boundary layers, thermal conductivity measurement, fin performance, transient heat conduction, natural and forced convection and radiation.

Pre-requisites: MEEN 3240 MEE Lab I, MEEN 3210 Heat Transfer

Course Learning Outcomes (CLO):

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

- 1) Perform statistical error analysis of experimental data
- 2) Understand measurements of flow velocity
- 3) Understand pressure drag and friction drag
- 4) Understand velocity boundary layer
- 5) Understand measurements of thermal conductivity
- 6) Understand measurements of fin performance
- 7) Understand measurements of thermal time constant
- 8) Present and report scientific data
- 9) Understand natural convection, forced convection and radiation

ABET Student Learning Outcomes (SO)

- a Ability to apply mathematics, science and engineering principles.
- b Ability to design and conduct experiments, analyze and interpret data.
- c Ability to design a system, component, or process to meet desired needs.

- d Ability to function on multidisciplinary teams.
- e Ability to identify, formulate and solve engineering problems.
- f Understanding of professional and ethical responsibility.
- g Ability to communicate effectively.
- h The broad education necessary to understand the impact of engineering solutions in a global and societal context.
- i Recognition of the need for and an ability to engage in life-long learning.
- j Knowledge of contemporary issues.
- k Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

CLO	ABET Student Outcomes (SO)										
	a	b	c	d	e	f	g	h	i	j	k
1	x				x						
2	x				x						
3	x				x			x			
4								x		x	
5	x	x									
6					x						x
7										x	x
8				x	x						
9		x									x

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

Reports: Please turn in your group reports in **electronic format (reports should be in PDF format and emailed to instructor: rameshshrestha@my.unt.edu)** as well as **hard copy** on the due day before your new lab session starts. **Please use key words like “MEEN 3242 Lab II, Group #5, lab report #7”.** **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.

Due days for lab reports (also definition of “late” lab reports): if not otherwise stated, lab reports will due EXACT 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 totally 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.**
- (2) Formula sheets could be maximum 5 pages on top of instructor's handouts, A4 or letter size, both sides
- (3) Student is responsible for preparing his/her own formula sheet
- (4) Formula sheets could include anything BUT: data or data analysis in lab report or experimental manual. Student who failed to follow this rule will score zero in the exam and this cheating matter will be reported to the department and university. Student who failed to follow this rule will score zero in the exam and this cheating matter will be reported to MEE department and university.
- (5) Formula sheets must be turned in with the exam papers (in the case of formula sheets were not checked by the instructor during the exam). Student who failed to follow this rule will score zero in the exam and this cheating matter will be reported to MEE department and university
- (6) **There will be NO make-up exam. Exceptions:** medical emergence (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.

IMPORTANT EXAM DATES

Midterm (Lab 1-4): MEEN3242.002 section: Oct.11th Wednesday 10:30-11:20 AM
MEEN 3242.001 section: Oct.11th Wednesday 2:30-3:20 PM

Final (Lab 5-9): MEEN3242.002 section: Dec. 13th Wednesday 10:30-11:20 AM
MEEN 3242.001 section: Dec. 13th Wednesday 2:30-3:20 PM

Link for Fall 2017 Final Exams - Discovery Park
<http://registrar.unt.edu/exams/final-exam-schedule/fall>

Fall 2017

Date	Event
August 28, 2017	First Class Day (Monday)
September 4, 2017	Labor Day (no classes; university closed)
November 23-26, 2017	Thanksgiving Break (no classes; university closed)
December 6-7, 2017	Pre-finals Days
December 7, 2017	Last Class Day
December 8, 2017	Reading Day (no classes)
December 9-15, 2017	Finals
December 23, 2017 - January 1, 2017	Winter Break (no classes; university closed)

MEEN 3242.001/002 MEE Lab II

Week	Dates	Lecture Topics Wednesday	Lab Session Thursday & Friday	Reports Due
#1	Aug. 28 th - Sep. 1 st	Overview of syllabus; Team up; Safety training;	Team up in lab F158 Meet your TA and group members; Collect contact information	--
#2	Sep. 4 th - Sep. 8 th	Lecture 1: Fluid Mechanics #1: Flow Velocity Measurement	Lab #1: Fluid Mechanics #1: Flow Velocity Measurement	--
#3	Sep. 11 th - Sep. 15 th	Lecture 2: Fluid Mechanics #2: Flow Across a Cylinder	Lab #2: Fluid Mechanics #2: Flow Across a Cylinder	Lab #1
#4	Sep. 18 th - Sep. 22 nd	Lecture 3: Fluid Mechanics #3: Golf Ball Drag Force	Lab #3: Fluid Mechanics #3: Golf Ball Drag Force	Lab #2
#5	Sep. 25 th - Sep. 29 th	Lecture 4: Fluid Mechanics #4: Velocity Boundary Layer	Lab #4: Fluid Mechanics #4: Velocity Boundary Layer	Lab #3
#6	Oct. 2 nd - Oct. 6 th	Review lecture for Midterm	No Experiment	Lab #4
#7	Oct. 9 th - Oct. 13 th	Oct. 11th Wednesday Midterm Exam:(labs 1-4) Fluid Mechanics Experiments	No Experiment	--
#8	Oct. 16 th - Oct. 20 th	Lecture 5: Heat Transfer #1: Thermal Conductivity	Lab #5: Heat Transfer #1: Thermal Conductivity	--
#9	Oct. 23 rd - Oct. 27 th	Lecture 6: Heat Transfer #2: Extended Heat transfer-Fin	Lab #6: Heat Transfer #2: Extended Heat transfer-Fin	Lab #5
#10	Oct. 30 th - Nov. 3 rd	Lecture 7: Heat Transfer #3: Transient Conduction	Lab #7: Heat Transfer #3: Transient Conduction	Lab #6
#11	Nov. 6 th - Nov. 10 th	Lecture 8: Heat Transfer #4: Natural Convection and Radiation	Lab #8: Heat Transfer #4: Natural Convection and Radiation	Lab #7
#12	Nov. 13 th - Nov. 17 th	Lecture 9: Heat Transfer #5: Forced Convection and Radiation	Lab #9: Heat Transfer #5: Forced Convection and Radiation	Lab #8
#13	Nov. 20 th - Nov. 24 th	Lecture 10:Group designed experiment	Thanksgiving Break Nov 23-26	
#14	Nov. 27 th - Dec 1 st	Review Lecture	Lab #10 Group designed experiment	Lab #9
#15	Dec 4 th - Dec 8 th	Pre Final Week, No Class	No Experiment	
#16	Dec. 11 th - Dec 15 th	Dec 13th Final Exam (labs 5-9)	NO Experiment, Lab #10 due on exam day	