Instructor: Xiaohua Li  
Office: NTDP F101G  
Phone: 940-369-8020  
Email: xiaohua.li@unt.edu  
Office Hours: open office policy  
Lecture Time/Location: Wednesday 8:30am-9:20am; room D215  
Lab Location: F158  

Lab Sessions  
(1) Thursday 11:00 am-1:50 pm  (group #1: 11:00-12:20; group #2: 12:30-1:50)  
(2) Thursday 5:30pm-8:20 pm  (group #3: 5:30-6:50; group #4: 7:00-8:20)  
(3) Friday 9:00 am-11:50 am  (group #5: 9:00-10:20; group #6: 10:30-11:50)  
(4) Friday 2:00 pm-4:50 pm  (group #7: 12:00-1:20; group #8: 1:30-2:50)  

Required 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 mechanical and energy engineering including convection, heat and energy transfer, experimental aerodynamics, thermal cycles, refrigeration, control of thermal systems, and alternative energy technologies (solar energy, fuel cells, and wind power)  

Pre-requisites: MEEN 3240 MEE Lab I  

Course Learning Outcomes (CLO):  
Upon successful completion of this course, students will able to:  
1) Perform statistical error analysis of experimental data  
2) Understand measurements of flow velocity, pressure and drag force  
3) Understand measurements of material thermal conductivity  
4) Understand heat transfer by extended surface  
5) Understand heat transfer by natural convection and radiation  
6) Understand heat transfer by forced convection and radiation  
7) Understand thermoelectric refrigeration and COP  
8) Present and report scientific data  
9) Design and conduct experiments  

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.
Grades:

- Lab Reports: 50%  
  - Grades: ≥ 90% A
  - Grades: 80-89.9% B
  - Grades: 70-79.9% C
  - Grades: 60-69.9% D
  - Grades: < 60% F

**Reports:** Please turn in your group reports in **electronic format (reports should be in MS WORD format and emailed to instructor: Xiaohua.li@unt.edu)** on the due day before your lab session starts. **NO late lab reports will be collected.** A sample report has been posted in the **Blackboard.**

**Due days for lab reports (Definition of “late” lab reports):** if not otherwise stated, lab reports due one week after your lab session. For example, if your group lab session is Friday, 9:00 am-10:30 am (this is the first group on Friday morning lab session), this means you will do your experiment on every Friday 9:00am-10:30 am. Therefore, your lab report will due next Friday 9:00 am, before the new experiment starts. In this case, lab report turned in after 9:00am Friday will be considered as “late” and will not be collected.

**Lecture attendance:**
Lecture attendance is mandatory; sign-in 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 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 each individual experiment. Each group member will evaluate the performances and 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 \((\text{average percentage}) \times (\text{group experiment report score})\) 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 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 closed notes with formula sheets.**
(2) Formula sheets can be maximum 5 pages, A4 or letter size, both sides
(3) Each student is responsible for preparing his/her own formula sheets.
(4) Formula sheets could include anything BUT: solutions to homework or examples. 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.
(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 the 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. 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: Mar. 5\(^{th}\) 2014 Wednesday, 8:30 am-9:20 am, D215
Final (Comprehensive): April 30\(^{th}\) 2014 Wednesday, 8:30 am-9:20 am, D215
# MEEN 3242.001 MEE Lab II

## Schedule Overview

(Subject to change)

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<tr>
<th>Week</th>
<th>Dates</th>
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<th>Lab Session</th>
<th>Reports Due</th>
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<td>01/13-01/17</td>
<td>Overview of syllabus; Team up; Safety; uncertainty and data analysis</td>
<td>Team up</td>
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<td>2</td>
<td>01/20-01/24</td>
<td>Lecture 1: Thermal Conductivity</td>
<td>Lab #1: Thermal Conductivity</td>
<td>Lab report #1</td>
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<td>Lecture 4: (Natural and Forced) Convection and Radiation</td>
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<td>Lab #6: Wind Power Estimation</td>
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<td>03/03-03/07</td>
<td>Midterm exam (labs 1-6)</td>
<td>No experiment</td>
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<td>Spring break, No lecture</td>
<td>No experiment</td>
<td>No reports due</td>
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<td>Lecture 7: Thermoelectric &amp; COP</td>
<td>Lab #7: Thermoelectric and COP</td>
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<td>Lecture 8: Wind Tunnel #1</td>
<td>Lab #8: Wind Tunnel #1</td>
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<td>Lecture 11: Wind Tunnel #4</td>
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<td>04/21-04/25</td>
<td>Lecture 12: Discussion on Group designed experiment</td>
<td>No experiment</td>
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<td>04/28-05/02</td>
<td>Final Exam: (labs 7-11)</td>
<td>Lab report #12 due on the final exam day</td>
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**Document History:**

Dr. Matthew J. Traum, prepared on 2/10/2009; Dr. Junghyon Mun, modified on 4/22/2011; Dr. Xiaohua Li, modified on 1/10/2012; 1/13/2013; 08/26/2013; 01/14/2014