MEET 4360 EXPERIMENTAL THERMAL SCIENCES
Spring 2019
3 credit hours, M W 8:30 - 9:20 a.m. NTDP F185 (Lecture), M 9:30 a.m - 12:20 p.m. NTDP F185 (Lab)

Instructor        Dr. Huseyin Bostanci
Office            NTDP F115L
Office Hours      M 1:00 - 3:00 p.m., W 10:00 a.m. - 12:00 p.m. (other times by appointment)
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Course Description
Designing and conducting experiments in fluid mechanics, hydraulics, thermodynamics and heat transfer. Pre-
Requisites: MEET 3940, 3990 and 4350 or concurrent enrollment.

Course Learning Outcomes (ETAC of ABET program outcomes addressed)
Upon successful completion of this course, students will be able to:
1. Understand current methods and instrumentation to measure fundamental parameters of thermal-fluid
   systems including temperature, pressure, and flow. (1, 4)
2. Use measurement methods for performance analysis of major thermal applications including vapor power
   cycles, air-conditioning, refrigeration, heat exchangers. (1, 4)
3. Learn fundamentals of building heating/cooling load calculations. (1)
4. Understand basics of building energy assessment. (1, 4)
5. Become familiar with modern data acquisition and analysis methods and tools. (4)
6. Design instrument systems for specified tasks. (2, 4)

Recommended Text
9780078027680.

Course Outline
Table 1 shows a tentative course outline. Instructor will attempt to follow it closely, and reserves the right to
substitute any other relevant material at any point throughout the course.

Grading Criteria
Midterm Exam                    30%
Final Exam                      30%
Lab Assignments                 40% (see policy #4)
Attendance, Attitude, Participation up to 5% (bonus)

Expected Grade Distribution
A: ≥85%, B: 70-84%, C: 60-69%, D: 50-59%, F: <50%

Policies and Procedures
1. This syllabus is subject to change during the semester with changes to be announced in class.
2. This course provides opportunities for students to take advantage of software packages (such as NI
   LabView), and equipment (such as data acquisition systems, temperature/pressure/flow sensors, infrared
   cameras, wind tunnel) supported by the department in the classroom or in lab experiments, in simulation
   studies, homework assignments, or in projects.
Table 1: Course Outline.

<table>
<thead>
<tr>
<th>Week of</th>
<th>Monday</th>
<th>Wednesday</th>
<th>Monday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 1/14/19</td>
<td>Introduction</td>
<td>Temperature Measurements</td>
<td>no lab</td>
</tr>
<tr>
<td>2. 1/21/19</td>
<td>MLK Day (no class)</td>
<td>Pressure Measurements</td>
<td>no lab</td>
</tr>
<tr>
<td>3. 1/28/19</td>
<td>Flow Measurements</td>
<td>Vapor Power Cycles</td>
<td>Lab 1. Temperature / Pressure Measurements (Groups A, B)</td>
</tr>
<tr>
<td>4. 2/04/19</td>
<td>Vapor Power Cycles</td>
<td>Air-Conditioning Processes</td>
<td>Lab 1. Temperature / Pressure Measurements (Groups C, D)</td>
</tr>
<tr>
<td>6. 2/18/19</td>
<td>Refrigeration Processes</td>
<td>Convection Heat Transfer</td>
<td>Lab 3. Air-Conditioning Processes (Groups D, C)</td>
</tr>
<tr>
<td>7. 2/25/19</td>
<td>Convection Heat Transfer</td>
<td>Heat Exchangers</td>
<td>Lab 3. Air-Conditioning Processes (Groups B, A)</td>
</tr>
<tr>
<td>8. 3/04/19</td>
<td>Heat Exchangers</td>
<td>Review</td>
<td>Lab 4. Refrigeration Processes (Groups A, B)</td>
</tr>
<tr>
<td>9. 3/11/19</td>
<td>Spring Break (no class)</td>
<td>Spring Break (no class)</td>
<td>no lab</td>
</tr>
<tr>
<td>10. 3/18/19</td>
<td>Midterm Exam</td>
<td>Building Heating/Cooling Loads</td>
<td>Lab 4. Refrigeration Processes (Groups C, D)</td>
</tr>
<tr>
<td>12. 4/01/19</td>
<td>Building Energy Assessment</td>
<td>ANSYS FEA</td>
<td>Lab 5. Convection Heat Transfer (Groups B, A)</td>
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<td>13. 4/08/19</td>
<td>ANSYS FEA</td>
<td>ANSYS FEA</td>
<td>Lab 7. ANSYS Steady State Thermal Analysis (Groups A, B, C, D)</td>
</tr>
<tr>
<td>15. 4/22/19</td>
<td>Lab 9. VI Development and DAQ</td>
<td>Lab 9. VI Development and DAQ</td>
<td>Lab 8. Heat Exchangers (Groups C, D)</td>
</tr>
<tr>
<td>16. 4/29/19</td>
<td>Review</td>
<td>no lab</td>
<td></td>
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</tbody>
</table>

Final Exam (comprehensive) 5/06/19, Monday, 8:00AM-10:00AM in NTDP F185

3. The course website, Canvas, at [https://canvas.unt.edu/](https://canvas.unt.edu/) will be used for posting course materials, assignments, and grades, as well as for email communications. Students are encouraged to check the course website often.

4. Students will complete regularly assigned lab reports. The lab reports have to be submitted on time by the following week on Monday at 8:30 a.m. for grading. Late submissions will get a grade of zero. The reports should be submitted in pdf format through the Canvas. The lowest two grades from the lab assignments will be dropped when calculating the average grade at the end of the semester.

5. For all classes, cell phones must be silenced. For exams, cell phones must be placed in backpacks and left at the front of the classroom.

6. During exams, paper and equation sheets will be provided so student’s desk will be empty except for a scientific calculator and your pencils/erasers.

7. Grades are based in part on the student’s ability to communicate. You must present your entire solution in an orderly way for each problem. Full grade points will be assigned only on the correct final answers with correct steps. You must show complete process of your solution. Partial credits will be assigned for correct steps taken towards the solution.

8. Requests for the review of a graded exam/assignment must be made within one week of the grade announcement. Upon review, the exam/assignment score may increase, remain the same, or decrease.
9. There will be no make-up exams or assignments unless you have a documented, university-excused absence. If you know in advance that you will miss an exam, you must contact instructor before the scheduled exam.

10. An “I” (incomplete) grade is given only for extenuating circumstances and in accordance with University and Departmental Policies.

11. The instructor reserves the right to change the grade distribution at the end of the semester. If any changes occur, the changes will be less stringent than the distribution above.

12. **Academic Integrity Standards and Sanction for Violations**: According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University. Any violation of academic honesty in an exam or assignment will result in a grade of zero and a report to https://facultysuccess.unt.edu/academic-integrity.

13. **Acceptable Student Behavior**: Student behavior that interferes with an instructor’s ability to conduct a class or other students’ opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student’s conduct violated the Code of Student Conduct. The University’s expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at deanofstudents.unt.edu/conduct.

14. **Access to Information- Eagle Connect**: Students’ access point for business and academic services at UNT is located at: my.unt.edu. All official communication from the University will be delivered to your Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail: eagleconnect.unt.edu/.

15. **ADA Statement**: UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one’s specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website at disability.unt.edu.

16. **Attendance Policy**: Attendance is required, as discussions and demonstrations during both lecture and lab sessions contain important information to do well on exams. Responsibility for class attendance rests with the student. Student’s level of attendance contributes up to 5% bonus points as described. An absence may be excused for the following reasons: a religious holy day, including travel for that purpose; active military service, including travel for that purpose; participation in an official university function; illness or other extenuating circumstances; pregnancy and parenting under Title IX; and when the University is officially closed by the President. The student is responsible for requesting an excused absence in writing as early in the semester as possible, and personally delivering to me satisfactory evidence to substantiate the excused absence.

17. **Course Safety Statement**: Students in the MEET 4360.101 are urged to use proper safety procedures and guidelines. While working in laboratory sessions, students are expected and required to identify and use proper safety guidelines in all activities requiring lifting, climbing, walking on slippery surfaces, using equipment and tools, handling chemical solutions and hot and cold products. Students should be aware that the UNT is not liable for injuries incurred while students are participating in class activities. All students are encouraged to secure adequate insurance coverage in the event of accidental injury. Students who do not have insurance coverage should consider obtaining Student Health Insurance. Brochures for student insurance are available in the UNT Student Health and Wellness Center. Students who are injured during class activities may seek medical attention at the Student Health and Wellness Center at rates that are
reduced compared to other medical facilities. If students have an insurance plan other than Student Health Insurance at UNT, they should be sure that the plan covers treatment at this facility. If students choose not to go to the UNT Student Health and Wellness Center, they may be transported to an emergency room at a local hospital. Students are responsible for expenses incurred there.

18. Emergency Notification & Procedures: UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course materials.

19. Retention of Student Records: Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Blackboard online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about students’ records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University’s policy.

20. Student Perceptions of Teaching Effectiveness (SPOT): Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13 and 14 of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from “UNT SPOT Course Evaluations via IASystem Notification” (no-reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the spot website at www.spot.unt.edu or email spot@unt.edu.