MEET 4360 EXPERIMENTAL THERMAL SCIENCES
Spring 2026
Mo 3:30 - 5:20 PM NTDP F185 (Lecture), We 3:30- 6:20 PM NTDP F158 (Lab)

Instructor	Dr. Huseyin Bostanci
Office Hours	Mon 2:00-3:30 PM, Wed 2:00-3:30 PM in F115L (other times by appointment)
Contact Info	huseyin.bostanci@unt.edu, 940-369-5101

TA	Mr. Chirag Byanjankar
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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
Cengel, Y., Cimbala, J., and Turner R., Fundamentals of Thermal-Fluid Sciences, 6th Edition, McGraw Hill, 2021, ISBN: 9781260716979.
Cengel, Y.A., Boles, M.A., Kanoglu, M., Thermodynamics, An Engineering Approach, 10th edition, McGraw Hill, 2024. ISBN: 1266664483.

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	25%
Final Exam	30%
Lab Assignments	40% *(see policy #4)*
Attendance, Attitude, Participation	5%

Expected Grade Distribution
A: ≥90%, B: 80-89%, C: 70-79%, D: 60-69%, F: <60%

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 lab experiments, in simulation studies, homework assignments, or in projects.

Table 1: Course Outline.

Week of	**LECTURE** Monday 3:30-5:20pm, *in F185*	**LAB** Wednesday 3:30-6:20pm, *in F158 unless otherwise noted*
1. 1/12/26	Introduction, Temperature Measurements	no lab
2. 1/19/26	MLK Day (no class)	no lab
3. 1/26/26	Pressure Measurements, Flow Measurements	Lab 1. Temperature / Pressure Measurements ***Groups A1, A2, A3***
4. 2/02/26	Vapor Power Cycles	Lab 1. Temperature / Pressure Measurements ***Groups B1, B2, B3***
5. 2/09/26	Refrigeration Processes	Lab 2. Vapor Power Cycles ***Groups A1, A2, A3, B1, B2, B3 in F160***
6. 2/16/26	Air-Conditioning Processes	Lab 3. Refrigeration Processes ***Groups A1, A2, A3***
7. 2/23/26	Convection Heat Transfer	Lab 3. Refrigeration Processes ***Groups B1, B2, B3***
8. 3/02/26	**Midterm Exam**	Lab 4. Air-Conditioning Processes ***Groups A1, A2, A3***
9. 3/09/26	Spring Break (no class)	Spring Break (no lab)
10. 3/16/26	Heat Exchangers	Lab 4. Air-Conditioning Processes ***Groups B1, B2, B3***
11. 3/23/26	Building Cooling-Heating Loads, Lab 5. Building Cooling-Heating Loads ***Groups A1, A2, B1, B2***	Lab 6. Convection Heat Transfer ***Groups A1, A2, A3***
12. 3/30/26	Building Energy Assessment, ANSYS FEA	Lab 6. Convection Heat Transfer ***Groups B1, B2, B3***
13. 4/06/26	ANSYS FEA, Lab 7. ANSYS Steady State Thermal Analysis ***Groups A1, A2***	Lab 8. Heat Exchangers ***Groups A1, A2, A3***
14. 4/13/26	ANSYS FEA, Lab 7. ANSYS Steady State Thermal Analysis ***Groups B1, B2***	Lab 8. Heat Exchangers ***Groups B1, B2, B3***
15. 4/20/26	Fundamentals of Data Acquisition -LabView Basics ***Groups A1, A2***	Lab 9. VI Development and DAQ ***Groups A1, A2, A3 in F185***
16. 4/27/26	Fundamentals of Data Acquisition -LabView Basics ***Groups B1, B2***	Lab 9. VI Development and DAQ ***Groups B1, B2, B3 in F185***
	Final Exam (comprehensive) 5/06/26, Wednesday, 12:30 - 2:30 pm	

3. The course website, Canvas, at https://canvas.unt.edu/ will be used for posting announcements, course materials, assignments, and grades. 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 Wednesday the following week at 3:30 p.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 the average grade is calculated at the end of the semester.
5. During class time, cell phones must be silenced. During the exams, cell phones must be placed in backpacks and left at the front of the classroom.
6. During the exams students can only use a scientific calculator, pencils, and erasers. No other electronics, textbooks, notes/notebooks are allowed.
7. Grades are based in part on the student's ability to communicate. You must present your work in a well-organized and well-articulated manner with appropriate depth.
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. **Technical Assistance**. Part of working in the online environment involves dealing with the inconveniences and frustration that can arise when technology breaks down or does not perform as expected. Here at UNT we have a Student Help Desk that you can contact for help with Canvas or other technology issues.
    UIT Help Desk: UIT Student Help Desk site (http://www.unt.edu/helpdesk/index.htm)
    Email: helpdesk@unt.edu
    Phone: 940-565-2324
    In Person: Sage Hall, Room 130
    Walk-In Availability: 8am-9pm
    Telephone Availability:
    - Sunday: noon-midnight
    - Monday-Thursday: 8am-midnight
    - Friday: 8am-8pm
    - Saturday: 9am-5pm

    Laptop Checkout: 8am-7pm
    For additional support, visit Canvas Technical Help (https://community.canvaslms.com/docs/DOC-10554-4212710328)
13. **Rules of Engagement**. Rules of engagement refer to the way students are expected to interact with each other and with their instructors. Here are some general guidelines:
    - While the freedom to express yourself is a fundamental human right, any communication that utilizes cruel and derogatory language on the basis of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law will not be tolerated.
    - Treat your instructor and classmates with respect in any communication online or face-to-face, even when their opinion differs from your own.
    - Ask for and use the correct name and pronouns for your instructor and classmates.
    - Speak from personal experiences. Use "I" statements to share thoughts and feelings. Try not to speak on behalf of groups or other individual's experiences.
    - Use your critical thinking skills to challenge other people's ideas, instead of attacking individuals.
    - Avoid using all caps while communicating digitally. This may be interpreted as "YELLING!"
    - Be cautious when using humor or sarcasm in emails or discussion posts as tone can be difficult to interpret digitally.
    - Avoid using "text-talk" unless explicitly permitted by your instructor.
    - Proofread and fact-check your sources.
    - Keep in mind that online posts can be permanent, so think first before you type.

    See these Engagement Guidelines (https://clear.unt.edu/online-communication-tips) for more information.
14. **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.

15. **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.
16. **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/.
17. **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.
18. **Attendance Policy**: Attendance to the fullest extent possible is highly encouraged, 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. Students' level of attendance contributes up to 5% 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.
19. **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.
20. **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.
21. **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.

22. **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.