

UNIVERSITY OF NORTH TEXAS – Mechanical and Energy Engineering  
MEEN 2210/MEET 3990 **THERMODYNAMICS I/APPLIED THERMODYNAMICS**  
SYLLABUS Summer 2026 3 Credit hours

**Instructor:** Dr. Hassan Qandil ([hassan.qandil@unt.edu](mailto:hassan.qandil@unt.edu))  
**Office Hours:** By appointment.  
**Lecture & Location:** MoWe 3:00 pm to 4:50 pm NTDP F183  
**Teaching Assistant:** TBD  
**TA Office Hours:** By appointment (E-Mail to Schedule)

**Pre-requisite:**

MEEN: Must complete Math 1720 and Phys 1710 with a grade of C or better.

MEET: Must complete Chem 1410/1430 and ENGR 2332 with a grade of C or better.

**Catalog Course Description:**

Thermodynamics is a fundamental mechanical engineering course for lower-level undergraduate students. This course will provide basic skills and knowledge to solve various classical macroscopic thermodynamic engineering problems. Specifically, throughout this course students can:

- (1) Understand the basic concepts of thermodynamic properties including temperature, pressure, volume, enthalpy, entropy, internal energy, and specific heat
- (2) Understanding the concept of work and energy transfer by heat
- (3) Apply the first law of thermodynamics and understand the concept of energy
- (4) Apply the control volume concept to analyze engineering systems such as turbines, heat exchangers, pump, etc.
- (5) Apply the second law of thermodynamics to analyze the thermodynamic cycle performance

**Required Text:**

*“Fundamentals of Engineering Thermodynamics”*, 9<sup>th</sup> edition (2020), M.J. Moran, H.N. Shapiro, D.D. Boettner, M.B. Bailey. Wiley, ISBN: 978-1119721437.

**ABET Criteria:**

Upon completion of this course, the student should be able to:

- Demonstrate ability to formulate the first and second law of thermodynamics;
- Demonstrate ability to identify, formulate, and solve engineering problems;
- Understand concepts of the First Law of Thermodynamics;
- Understand the concept of work and energy transfer by heat;
- Understand concepts of the Second Law of Thermodynamics;
- Demonstrate ability to evaluate and work with thermodynamic properties;
- Demonstrate ability to use control volume analysis for various engineering applications.
- Understand failure criterion for designs

**ABET EAC Student Outcomes (SO):**

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics;
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors;
3. An ability to communicate effectively with a range of audiences;
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts;
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives;
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions;
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

**CALCULATORS:** only calculator approved for course are those permitted on (FE) exam. No graphing calculators.

- 1) Hewlett Packard—HP 33s and HP 35s models, but no others.
- 2) Casio—All fx-115 and fx-991 models. Any Casio calculator must contain fx-115 or fx-991 in its model name.
- 3) Texas Instruments: All TI-30X and TI-36X models. Any TI calculator must contain either TI-30X or TI-36X in its model name.

**GRADES:** Standard grading scale used: 90/80/70/60. Re-grade request must be made in class the day returned. **No re-grade requests after class dismissed.** Entire exam will be re-graded, which may result in lower score than originally assigned. **Make-ups are NOT allowed**, with the exception being UNT-excused absences with proper documentation.

Attendance	5% <b>Taken In-class</b> (Extra credit for lecture participation)
Homework	20% <b>Online PDF submissions</b> , problem solving / critical thinking
Quizzes	10% <b>In-class</b> , problem solving, like home practice
Exams	65% <b>In-class</b> , reading comprehension / multiple choice / qualitative

**Extra Credit is available in class, and through exams and quizzes**

## TENTATIVE LECTURE SCHEDULE

Week	Dates	Chapter	Topic	Exam
1	May. 18 <sup>th</sup> – May 22 <sup>nd</sup>	1	Intro ( <b>No Class May 18<sup>th</sup></b> )	
2	May 25 <sup>th</sup> – May 29 <sup>th</sup>	2	Energy & First law ( <b>Memorial Day - No Classes - May 25<sup>th</sup></b> )	
3	Jun. 1 <sup>st</sup> – Jun. 5 <sup>th</sup>	2	Energy & First law	
4	Jun. 8 <sup>th</sup> – Jun. 12 <sup>th</sup>	3	Evaluating properties	Exam-1
5	Jun. 15 <sup>th</sup> – Jun. 19 <sup>th</sup>	3	Evaluating properties	
6	Jun. 22 <sup>nd</sup> – Jun. 26 <sup>th</sup>	4	Control volume analysis	
7	Jun. 29 <sup>th</sup> – Jul. 3 <sup>rd</sup>	4,5	Control volume analysis, Second law	Exam-2
8	Jul. 6 <sup>th</sup> – Jul. 10 <sup>th</sup>	5	Second law	
9	Jul. 13 <sup>th</sup> – Jul. 17 <sup>th</sup>	6	Entropy	
10	Jul. 20 <sup>th</sup> – Jul. 24 <sup>th</sup>	6	Entropy	Exam-3

**COURSE POLICY:** **Course delivery method is in-person.** All course announcements, lecture notes, recorded material and assignments will be posted on the MEEN 2210 / MEET 3990 Canvas courses. *Students are expected to have access to the textbook on their own.*

**HOMEWORK:** All **Homework submissions are online** through CANVAS and in a PDF format. **NO LATE SUBMISSIONS ALLOWED** except for students with UNT-approved excuse (please follow UNT Policy 06.039).

**EXAMS:** All **quizzes and exams will be in-class.** If you have an emergency and need an authorized absence as per UNT Policy 06.039, please connect with the Dean of Students' office requesting an excused absence in writing ([studentaffairs.unt.edu/dean-of-students](http://studentaffairs.unt.edu/dean-of-students)).

**ATTENDANCE:** Refer to [UNT's 06.039 Student Attendance & Authorized Absences Policy](#):

- The student is responsible for regular and punctual attendance and is expected to participate in all courses in which the student is enrolled.
- Communicate with the professor prior to being absent, so you can discuss and mitigate the impact of the absence on your attainment of course learning goals.
- ***If a student accumulates more than one and a half week of unexcused absences (three lectures), the student will be ineligible to sit for the 3<sup>rd</sup> exam until a formal meeting with the instructor occurs to review the reasons for the absences and written approval to proceed is granted.***
- ***Only University Excused Absences indicated in Policy 06.039 are acceptable.***

**ACADEMIC INTEGRITY STANDARDS AND SANCTIONS FOR VIOLATIONS:** According to UNT Policy 06.003, 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. Academic dishonesty will not be tolerated and will result in zero assignment score and

reported to Office of Academic Integrity. No exceptions. Having any calculator not on the approved list is a violation of Academic Integrity.

**ADA Policy:** 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 anytime, 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 (<https://disability.unt.edu/>).

**ACCEPTABLE 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. To learn more, visit UNT's Code of Student Conduct (<https://deanofstudents.unt.edu/conduct>).

**STUDENT PERCEPTIONS OF TEACHING EFFECTIVENESS (SPOT)** Course participates in SPOT evaluations (<http://spot.unt.edu/> or email [spot@unt.edu](mailto:spot@unt.edu)).

**RETENTION OF STUDENT RECORDS** Course follows Family Educational Rights and Privacy Act (FERPA) laws and UNT Policy 10.10, Records Management and Retention.

**SYLLABUS CHANGES** Instructor reserves right change syllabus. Any changes announced in class and posted to CANVAS with an accompanying email to student's UNT email address.

**ACCESS TO INFORMATION - EAGLE CONNECT:** Students' access point for business and academic services at UNT is located at: [my.unt.edu](http://my.unt.edu). All official communication from the University will be delivered to a student's Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail Eagle Connect (<https://it.unt.edu/eagleconnect>).