

EML 3100 - Thermodynamics, Spring 2024 (January 8, 2024)
8th Period (0109 Little Hall, Section 27G3) MWF

Catalog Description: Credits: 3; Application of the first and second laws of thermodynamics to closed and open systems and to cyclic heat engines. This includes the development of procedures for calculating the properties of multiphase and single-phase pure substances.

Pre-requisites and Co-requisites: *Pre-requisites: CHM 2045, MAC 2313 and PHY 2048.*

Course Objectives: This course provides an intermediate level coverage of thermodynamics. Students will learn concepts such as system and control volume analyses, evaluation of thermodynamic properties, application of conservation of mass, energy, and the second law of thermodynamics, the use of entropy, the application of availability and irreversibility to engineering problems, and analysis of power and refrigeration cycles.

Relationship of course to student outcomes:

This course achieves the following ABET outcomes [note that the outcome number corresponds to the respective ABET outcomes (1) through (7):

- (1) Ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics (**High**)
- (2) Ability to communicate effectively with a range of audiences (**Low**).
- (3) 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 (**Low**).
- (4) Ability to acquire and apply new knowledge as needed, using appropriate learning strategies (**Low**).

Instructor: Dr. S.A. Sherif, Professor
Department of Mechanical and Aerospace Engineering
1064 Center Drive, NEB Room 235
Gainesville, FL 32611
Tel (352) 392-7821, sasherif@ufl.edu
<https://mae.ufl.edu/people/faculty/primary/profiles/sa-sherif/>
Office Hours: MWF 4:15-5:15pm or by appointment

Teaching Assistants (Office Hours): There are four graders that do not hold office hours. All questions should be directed to Dr. Sherif

Meeting Times: 3:00-3:50pm (8th Period)

Class/Laboratory Schedule/Homepage: No lab

Homepage: Students have access through E-Learning with Canvas

Meeting Location: Little Hall 0109

Material and Supply Fees: None

Textbooks and Software Required: Fundamentals of Thermodynamics, 7th or 8th Editions, C. Borgnakke and R. Sonntag, John Wiley and Sons, Inc. (Make sure you have a hard copy book during the exams. Loose pages are not allowed unless they are in permanent binding. Three-ring binding is not acceptable but spiral binding is). **Do not get the International Student Edition as it does not have all the needed appendices.**

Recommended Reading: None

Course Outline

Course Schedule and Assignments: Exams 1, 2, and 3 are scheduled in the evening (Section numbers below are based on the 7th Edition).

Date	Topic	Date	Topic
Jan 8	2.1 to 2.5	March 6	8.11 to 8.13
Jan 10	2.6 to 2.12	March 8	9.1 to 9.3
Jan 12	3.1 to 3.3	March 11	Spring Break
Jan 15	Martin Luther King Holiday	March 13	Spring Break
Jan 17	3.4 to 3.6	March 15	Spring Break
Jan 19	3.7 to 3.10	March 18	9.4 to 9.6
Jan 22	4.1 to 4.3	March 20	EXAM 2 (Chapters 6, 7, 8)
Jan 24	4.4 to 4.6	March 22	10.1
Jan 26	4.7 to 4.9	March 25	10.2
Jan 29	5.1 to 5.3	March 27	10.2 Continued (Project 1 Due)
Jan 31	5.4 to 5.5	March 29	11.1 to 11.3
Feb 2	5.6 to 5.7	April 1	11.4 to 11.5
Feb 5	5.8 to 5.10	April 3	11.6 to 11.7
Feb 7	6.1 to 6.4	April 5	11.8 to 11.9
Feb 9	6.5 to 6.6	April 8	11.10 to 11.11
Feb 12	7.1 to 7.2	April 10	11.12
Feb 14	EXAM 1 (Chapters 2, 3, 4, 5)	April 12	12.1 to 12.3
Feb 16	7.3 to 7.4	April 15	12.4 to 12.6
Feb 19	7.5 to 7.7	April 17	EXAM 3 (Chapters 9, 10)
Feb 21	7.8 to 7.10	April 19	12.7 to 12.9
Feb 23	8.4	April 22	12.10 to 12.12 (Project 2 Due)
Feb 28	8.5 to 8.6	April 24, 26	Reading Days
March 1	8.7, 8.8	May 2	Final Exam (3:00-5:00pm Little Hall 109)
March 4	8.9, 8.10		(Final Exam is comprehensive)

Locations, Dates, and Times of Midterm Exams:

Date	Room	Period	Time
February 14	TBD	E2-E3	8:20-10:10pm
March 20	TBD	E2-E3	8:20-10:10pm
April 17	TBD	E2-E3	8:20-10:10pm

Attendance Policy, Class Expectations, and Make-Up Policy: Attendance is strongly recommended. Irregular attendance always results in poor or mediocre performance. It is expected that 3 to 5 study hours for each contact hour are to be spent every week studying for this class. If a week is missed, the study hours need to be made up in the following weeks. **The instructor may give an in-class problem (quiz) which counts as part of the homework.**

Re-grading Policy: Any re-grade requests must be submitted in writing **within 5 days after return of the graded paper**. The written request must explain in detail what you want the grader to do and where you believe he/she has made a mistake in grading. **These requests will be accepted by Dr. Sherif via email or a hard copy in person.**

Policy on Homework Assignments: Homework problems will be assigned via Canvas and submitted through Canvas. **No email or hard copy submissions will be accepted.** Only two problems will be graded at random. Homework papers will not be returned, but a correct solution will be posted on Canvas. You may upload homework assignments early, but not past the due date. The assignments will be due at 11:59pm on the due date. After that, the system will stop accepting the assignments. Late homework is not accepted via any other means.

Miscellaneous Policies: Students will be held responsible for knowledge of all scheduling and policy announcements made in class. You may call Dr. Sherif (352-392-7821) or send him an e-mail 24/7. Please make sure you leave a phone number if you call and cannot find him. If you send an e-mail, please also list a phone number where you can be reached. Dr. Sherif will return your call within a few hours. Sending an e-mail along with the voice message can also help alert him to your request.

Pre-recorded Help Sessions

There are 20 pre-recorded help sessions (Labeled E1 through E20) on Canvas that students are strongly encouraged to watch. These lectures cover Entropy (Chapter 8 in the 7th Edition) through the end of the course. These 20 lectures have lots of solved problems that will teach you how to apply the concepts in different situations. There are also two substitute lectures (labeled Substitute Lectures 1 and 2) that I will be letting you know when to watch.

Grading

Homework	7%
Project 1	3%
Project 2	5%
Exam #1	20%
Exam #2	20%
Exam #3	20%
Final Exam	25%

Grading Scale

A	90-100		
A-	86-90	B+	82-86
B	78-82	B-	74-78
C+	70-74	C	66-70
C-	62-66	D+	58-62
D	54-58	D-	50-54
E	0-50		

Make-up Exam Policy: There will be no make-up exams. Unless there is a **documentable extreme medical emergency**, no credit will be given for a missed exam. It is the student's responsibility to make sure he/she is available to take the exam. All three midterm exams will be given in the evening (Periods E2 and E3) in a classroom to be designated in advance.

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluer.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises

involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without the permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy – UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University’s core values, including the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information, and veteran status.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- HWCHE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Accommodation for Students with Disabilities – Students requesting classroom accommodation must first register with the Dean of Students’ Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

UF Counseling Services – Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling
- SHCC mental Health, Student Health Care Center, 392-1171, Personal and Counseling.
- Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling

Software Use – All faculty, staff, and students at the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources **Health and Wellness**

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus:

<https://seccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

On-Line Students Complaints: <https://distance.ufl.edu/getting-help/>;
<https://distance.ufl.edu/state-authorization-status/#student-complaint>.