

**Thermodynamics**  
EML 3100 Section 119A  
MWF 11:45 – 12:35  
LAR 239  
Spring 2020

**Instructor:**

Teresa Benitez

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Office 352-294-0435      Cell 787-403-7504

Office Hours: T 9:45 – 11:45 am, 12:30 – 2:30 pm

W 9:45 – 10:45 am

R *Remote (check Canvas)*

F 9:45 – 10:45 am

*By appointment at other times.*

**Teaching Assistant(s):**

○ TBD

**Course 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.

**Course Pre-Requisites / Co-Requisites**

Pre-requisites: CHM 2041, CHM 2045, MAC 2313 and PHY 2048.

**Course Objectives**

Students will learn thermodynamics concepts, such as control mass and control volume analyses, evaluation of thermodynamic properties, application of conservation of mass and conservation of energy, the second law of thermodynamics, entropy, and analysis of power and refrigeration cycles.

**Professional Component (ABET):**

- Engineering science: 90%
- Engineering design: 5%
- Engineering/mathematical analysis: 5%

**Relation to Program Outcomes (ABET):**

Outcome	Coverage*
a. Apply knowledge of mathematics, science, and engineering	High
b. Design and conduct experiments, as well as analyze and interpret data	
c. Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
d. Function on multidisciplinary teams	Low
e. Identify, formulate, and solve engineering problems	High
f. Understand professional and ethical responsibilities	Low
g. Communicate effectively	Medium
h. Understand the impact of engineering solutions in a global, economic, environmental, and societal context	High
i. Recognize the need for and be able to engage in lifelong learning	Medium
j. Understand contemporary issues	Medium
k. Use the techniques, skills, and modern engineering tools necessary for engineering practice	High

\*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not part of the course.

### **Recommended Textbooks and Software**

- Title: Thermodynamics: An Engineering Approach
- Author: Cengel and Boles
- Publication date and edition: 2018, 9th Edition

### **Exam dates and information**

- February 3
- February 28
- April 1
- April 22
- *All quizzes and exams will be with open notes. You may bring your notebook and a binder containing any loose papers you want to bring, including the properties tables. Computers and textbooks are not allowed. **Loose papers are not allowed.** If you take notes on a tablet, you may bring the tablet to the exam and sit in the front of the classroom for the examination (with the TA).*

### **Attendance Policy and Make-Up Policy**

- Lecture attendance is not mandatory. Attendance will be taken randomly and used for extra credit for the final grade. Students are encouraged to attend and are **held responsible for the material and announcements made during lecture.**
- Regrade requests must be submitted within a week after a paper or problem set has been returned to you. Regrade requests will be made directly to the instructor.
- Make-up exam requests will be considered by the instructor.

### **Homework**

- No homework! Recommended problems will be posted often.

### **Project**

- Students will have the opportunity to choose between an individual or a group project: build and modify an engine model, or write a research paper.

### **Announcements**

- A weekly announcement will be posted on Canvas every Sunday or Monday, depending on the schedule for that week. Any additional urgent announcements may be posted by the instructor or a TA, and/or brought up during lecture.

### **Evaluation of Grades**

<b>Assignment</b>	<b>Percentage of Final Grade</b>
Project	20%
Exams	80%
	<b>100%</b>

- One of the exams will be take-home, which means that 40% of the grade will be based on work outside of the classroom.

### ***Grading Policy***

<b>Percent</b>	<b>Grade</b>	<b>Grade Points</b>
90.0 - 100	A	4.00
87.0 - 89.9	B+	3.33
80.0- 86.9	B	3.00
77.0- 79.9	C+	2.33
70.0 - 76.9	C	2.00
67.0 - 69.9	D+	1.33
60.0 – 66.9	D	1.00
0 - 59.9	E	0.00

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

### ***Students Requiring Accommodations***

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure 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.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

### ***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://www.dso.ufl.edu/sccr/process/student-conduct-honor-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.

### ***Software Use***

All faculty, staff, and students of 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:

<http://registrar.ufl.edu/catalog0910/policies/regulationferpa.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](mailto: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:** <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

#### **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](mailto:Learning-support@ufl.edu).  
<https://lss.at.ufl.edu/help.shtml>.

**Career Resource Center**, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.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://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

**On-Line Students Complaints:** <http://www.distance.ufl.edu/student-complaint-process>.