ASEN 3113: Thermodynamics and Heat Transfer, Fall 2017

Instructors:

Xinlin Li
Office: ECOT 537
Phone: 303-492-3514 or 303-735-0523
Office Hours: Wed: 11-12, and also available right after lectures and by appointment

Email:lix@lasp.colorado.edu (preferred)

Ms. Trudy Schwartz
Office: ECAE 1B24
Phone:303-735-2986
Email: trudy.schwartz@colorado.edu

Aly Badran, TA
Office Hours: 9:30-10:30 on Th at the aerospace undergraduate lounge
Email: Aly.Badran@colorado.edu

Daniel Sinner, CA
Office Hours: 10-11 on Wed at the aerospace undergraduate lounge
Email: daniel.sinner@colorado.edu

Matt Tooth, TA
Office Hours: 13:00-14:00 on Mon at the aerospace undergraduate lounge
Email: Matthew.Tooth@colorado.edu

Zack Fellows, CA
Email: Zachary.Fellows@colorado.edu

Text: **Y, A, Cengel, J. M. Cimbala, R. H. Turner,**
Fundamentals of Thermal-Fluid Sciences, 4th edition

Prerequisites: ASEN 2002 or equivalent.

Introduction: This course follows ASEN 2002 and covers the Second Law of Thermodynamics, Entropy, Power/Energy Cycles and Heat Transfer (conduction, convection and radiation). The emphasis will be on understanding the basic physical principles associated with these topics and developing the student's ability to solve numerical problems associated with them. Experiments will be carried out to help the student gain experience with the systems representing these principles.

Course Objective: Given regular class attendance, reading of assigned text material in preparation for quizzes, careful and comprehensive completion of all assignments, students should be able to: (1) understand the general concepts of thermodynamics and heat transfer in order to develop an intuitive grasp of the subject matter; (2) develop an ability to apply these basic concepts to engineering design problems.

Course Structure: The textbook will be followed closely but some additional material may be introduced to broaden a particular subject. This material will be distributed to the class. Students are expected to read the assigned textbook section in time to prepare for both in class discussion and for quizzes given approximately every week. Homework assignments will be weekly or bi-weekly.

Exams: There will be 3 hour-long exams and a final exam. All hour-long exams will be in-class and cover the material between it and the last exam. All Exams are open book and open notes and may require tables and calculation so please bring your books and calculators to class. There will be no make-up for exams and quizzes. After the hour-long exams are graded and returned we will go over them to resolve any issues that were particularly problematical to the class. If you have any particular difficulty with a question or topic please write it down and submit in written form (hardcopy or email) so that we can go over it in class. In this way the whole class can benefit from the discussion of problem topics.

GRADING

Reading/lecture quizzes (~10 min each; drop the lowest two)	05%
Monthly Exams (3, drop the lowest one => 2)	20%
Experimental Labs (2 reports)*	20%
Design Labs (1 PPT presentation)*	10%
Peer Evaluation*	05%
Homework	15%
Final (4:30 p.m. – 7:00 p.m. on December 17)	25%
	100%

*Group effort only counts toward final grade if total individual grade is C or better

Letter Grading Scheme:

Letter grades will be assigned as follows:

Letter Grade	Percent Grade	4.00 Scale
A	93.00 – 100.00	4.00
A-	90.00 – 92.99	3.67
B+	87.00 – 89.99	3.33
B	83.00 – 86.99	3.00
B-	80.00 – 82.99	2.67
C+	77.00 – 79.99	2.33
C	73.00 – 76.99	2.00
C-	70.00 – 72.99	1.67
D	60.00 – 69.99	1.00
F	Below 60.00	0.00

All three midterm exams as well as the final examination will be curved, while the homework, quizzes, labs, and projects will not be curved.

Remarks on Grading:

Our grading scheme is not designed to reward or punish. It is designed to indicate your level of competency compared to the standard that we set. Do you meet the minimum level of competency? Do you exceed the minimum? Are you below the minimum? The answers to these questions should be indicated by your final grade.

The final grade indicates your readiness to continue to the next level of courses. Meeting the minimum requirements indicates that you are prepared to continue at least at the minimum level required for the next in the sequence of courses. Exceeding the minimum means you are ready to enter the next course and that you have mastery of material beyond the minimum, that is, you show some level of proficiency.

Important Notes

1. Teamwork and lab performance will be obtained from peer evaluation and from the faculty and TA observation of the student's participation in classes and lab.

2. The scheduled laboratory hours will be used for both experimental and design lab projects. These lab hours should be used for course work even when no formal supervision is present.

3. Attendance to all lectures and laboratory workshops is expected.

4. Expect new material to be presented in both the "lectures" and the "laboratory" hours.

5. Why have reading assignments, homework, lab exercises, exams, and design projects?

- Reading assignments are to be completed before the lecture/discussion. The lecture/discussions should help to clarify and supplement what you have read.
- Homework assignments will cover both material from lectures and material assigned but not covered in lectures. Homework enforces the mental processes that help you to become proficient in a subject. In addition, homework may encourage you to learn other material not included in lectures or laboratories.
- Experimental laboratory exercises are either more complex than hands-on homework or require special equipment. You will work in teams but are required to submit individual experimental laboratory reports.
- Design project helps you to learn how to synthesis the basic concepts, methods, and tools presented in the course curriculum. The team-oriented approach will give you experience in working and cooperating in groups.
- Reading quizzes at the beginning of class provide a gauge to determine what you have learned independently from the assigned reading. Possible Lecture quizzes, at the end of class, cover the previous days' and/or the same day's lecture (Always bring a calculator and your text book to the classroom).

6. Safety is the number one priority for laboratory exercises. If you have not already done so, you are required to attend safety lectures presented both by ITLL and by course staff during the first week of the semester. Anyone violating rules of safe conduct may receive a zero for the laboratory exercise and may be restricted from ITLL. Use of ITLL facilities is a privilege, not a right. Those endangering themselves, others, or laboratory equipment by their unsafe conduct will not maintain their access privileges.

7. Some assignments will require access to a computer and some basic programming skills and familiarity with some popular programming languages and/or environments similar to what is covered in GEEN 1300, e.g., Excel and MATLAB. You have access to the ITLL Lab Plaza computers during regular class lab times or during periods for which no other class is using them. There are also a number of computers in the student group study rooms and in the College.

8. All homework must be on 8.5x11-inch clean paper. Homework will be turned in electronically using scanning app or scanner. TA/CA will explain this in detail.

9. Always submit work in a professional form. Neatness, clarity, and completeness count.

10. Late assignments will not be accepted. However, if you will not be attending class you may turn-in your homework early, and include an explanation. If you know in advance that you must miss a homework due date or lab, send us e-mail or voice mail to make arrangements. Be on time!

11. Collaboration is permitted on homework. This means you may discuss the means and methods for solving problems even compare answers, but you are not free to copy someone's assignment. The work that you turn in must be your own--copying is not allowed for any assignments. Collaboration on quizzes and exams, or using another student's work or allowing another student to use your work is academic misconduct.

12. This class is not graded on a curve; there are absolute expectations of performance. However, we reserve the right to normalize the class grades based on the highest performance in the class. The normalization process will lower no grade.

In order to continue on ASEN core courses, a minimum grade of C is required.

Other Important Notes

1) If you qualify for accommodations because of a disability, please submit me a letter from Disability Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by e-mail at dsinfo@colorado.edu. If you have a temporary medical condition or injury, see Temporary Injuries guidelines under the Quick Links at the Disability Services website.

2) Every effort will be made to accommodate students who, because of religious obligations, have conflicts with scheduled exams, assignments, or other required attendance, provided they notify me well in advance of the scheduled conflict.

3) Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veteran's status, sexual orientation, gender, gender identity and gender expression, age, disability, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. For more information, see the policies on classroom behavior and the student code.

4) All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-735-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Additional information regarding the Honor Code policy can be found online and at the Honor Code Office.