

# ASEN 3713 – Thermodynamics and Heat Transfer

## Course Syllabus, Spring 2024

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### LECTURE INSTRUCTOR

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### TEACHING ASSISTANTS

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### OFFICE HOURS AND CONTACT INFORMATION

**Zoom Virtual Office Hours:** Tuesday and Thursday 10:00am to 11:00am

**Zoom Virtual Office Link:**

**In-Person Office Location:** AERO 369

**Email:** [hisham.ali@colorado.edu](mailto:hisham.ali@colorado.edu)

**Email Policy:** It is my intent to make myself as accessible as possible to you during this semester within the bounds of my other responsibilities. In general, I will do my best to accommodate student needs and respond as promptly as possible to e-mails. In your email, please identify yourself by providing your name and the course number (**ASEN 3713**) at the start of your message. However, all technical questions on course content should be asked during lecture, office hours, or on the course Slack Workspace. One-on-one meetings with the instructor will only be scheduled to address individual administrative or academic issues.

### COURSE SCHEDULE, LOCATION, AND LINKS

**Lecture Time and Location:** All lectures will be held in AERO 120 at the following times

- **ASEN 3713 Section 001:** 1:00 PM – 2:15 PM, Tuesday and Thursday, AERO 120

**Course Links:**

- **Website Link:**
- **Slack Link:** (An invitation link will be sent via Canvas)

### COURSE OVERVIEW

**Course Introduction:** This course follows ASEN 2702 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.

**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.

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**Course Reading and Assignments:** 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.

**Course Quizzes:** Quizzes will be conducted on Canvas regardless remote or in-person teaching mode. Students will take quizzes on their own time after lecture X but before lecture X+1. Once a quiz is started, students have the specified time (between 10 and 20 minutes) to finish it. Quizzes cover previous lectures and reading assignments.

**Course Exams:** There will be three mid-term exams and a final exam. All mid-term exams will be in-class and cover the materials between it and the previous exam. All exams are closed book. However, for mid-term exams 1, 2, 3 and the final exam you are allowed to have 1, 2, 3, and then 4 single-sided 8.5x11 pages of crib notes, respectively, meaning 1-page crib notes accumulatively for each exam, **labeled with your name**. Always bring a calculator. Thermodynamic Tables will be provided to you for the exams. There will be no make-up opportunity for quizzes since the lowest three will be dropped. Make ups for exams are extremely difficult to accommodate. There will be no unexcused exam makeups provided. If you miss an exam, the course instructor will evaluate each case on an individual basis based on the context and information available to decide if a makeup exam will be provided. Students are encouraged to provide as much documentation as possible to enable an informed decision. If necessary, the instructor may choose to use your existing grades to cover your missed grade(s).

**Course Schedule:** The specific weekly course schedule (lectures, exams, assignments) will be posted to Canvas.

### COURSE TEXTBOOK AND PREREQUISITES

**Course Textbook:** Cengel, Cimbala, and Turner, *Fundamentals of Thermal-Fluid Sciences, 5th Edition*. McGraw-Hill Education.

**Course Pre-Requisites:** ASEN 2702 or equivalent

### COURSE GRADING AND POLICIES

Our grading scheme is designed to indicate your level of competency compared to the standards set by the AES faculty. Do you meet the minimum level of competency? Do you exceed the minimum? Are you below the minimum? This should be indicated by the final grade. We (the faculty) are professionals and it is our job to set and maintain standards. We are expected to use our education, experiences, and interactions with industry, government laboratories, others in academia, etc., to determine the contents of these standards. Because our program is accredited by ABET (Accreditation Board for Engineering and Technology), the AES curriculum meets or exceeds that board's standards. As with any other professionals (doctors, lawyers, etc.) you must trust that we know what we are doing and that we are obliged to uphold standards.

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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 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, i.e., you show some level of proficiency. This course consists of several graded components, with your final grade determined by the following breakdown:

### Grading Breakdown:

Reading/Lecture Quizzes (~10 min each; drop the lowest 3)	20%
Three Midterm Exams (10% each)	30%
Homework	30%
Final Exam (1:30 – 4pm, Saturday, May 4 <sup>th</sup> , 2024)	20%
Total	100%

### Grading Notes:

- This class is not graded on a curve; there are absolute expectations of performance. However, we reserve the right to normalize and adjust the class grades based on the highest performance in the class. This process will not lower a person's grade.
- Any grade question/dispute must be resolved within two weeks after the grade is posted. This will avoid undue complications at the end of the semester when final grades are being determined. For the final exam and final grade, any issues will be resolved at the beginning of the next semester (not during the break). There are certain due processes to be followed.

### Assignment Policies:

- All assignments will be submitted through GradeScope or Canvas in an appropriate format (PDF, .m, etc.)
- Homework must be submitted before the due date and time. **Please box final answers for each question.**
- All individual submissions must follow the convention: LastName\_FirstName\_AssignmentName, for example: Smith\_John\_HW1.
- Always submit work in a professional form. Neatness, clarity, and completeness count. If submitted work is not legible, you may not receive full credit. Please review before and after submitting. It is your responsibility to make sure the submission is complete.
- Late submissions will not be accepted. If you know in advance that you must miss a homework due date for a legitimate reason, send the relevant Instructors/TA/TFs an e-mail to make arrangements. We expect students to be professional by attending class and submitting assignments on time.

**Collaboration Policy:** 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.

**Slack Policy:** To help better facilitate communication a Slack Workspace has been set-up for this course. An invitation link will be posted as a Canvas announcement. You must sign in with your CU email address (@colorado.edu) to be successfully added to the workspace. Please note that you are not required to use Slack and all course wide notifications will still be sent out via the course webpage. This tool is primarily to improve communication and collaboration within the course. Please note that while the Instructor and Teaching Assistant aim to regularly monitor the Slack Workspace, you should not expect communication outside of business hours.

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### **CLASSROOM BEHAVIOR**

Students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote, or online. Failure 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 race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation, or political philosophy. For more information, see the [classroom behavior](#) policy, the [Student Code of Conduct](#), and the [Office of Institutional Equity and Compliance](#).

### **REQUIREMENTS FOR INFECTIOUS DISEASES**

Members of the CU Boulder community and visitors to campus must follow university, department, and building health and safety requirements and all public health orders to reduce the risk of spreading infectious diseases. The CU Boulder campus is currently mask optional. However, if masks are again required in classrooms, students who fail to adhere to masking requirements will be asked to leave class. Students who do not leave class when asked or who refuse to comply with these requirements will be referred to Student Conduct & Conflict Resolution. Students who require accommodation because a disability prevents them from fulfilling safety measures related to infectious disease will be asked to follow the steps in the “Accommodation for Disabilities” statement on this syllabus.

For those who feel ill and think you might have COVID-19 or if you have tested positive for COVID-19, please stay home and follow the [further guidance of the Public Health Office](#). For those who have been in close contact with someone who has COVID-19 but do not have any symptoms and have not tested positive for COVID-19, you do not need to stay home.

### **ACCOMMODATION FOR DISABILITIES, TEMPORARY MEDICAL CONDITIONS, AND MEDICAL ISOLATION**

[Disability Services](#) determines accommodations based on documented disabilities in the academic environment. If you qualify for accommodations because of a disability, submit your accommodation letter from Disability Services to your faculty member in a timely manner so your needs can be addressed. Contact Disability Services at 303-492-8671 or [dsinfo@colorado.edu](mailto:dsinfo@colorado.edu) for further assistance.

If you have a temporary medical condition or required medical isolation for which you require accommodation, please email the instructor directly. Also see [Temporary Medical Conditions](#) on the Disability Services website.

### **PREFERRED STUDENT NAMES AND PRONOUNS**

CU Boulder recognizes that students' legal information doesn't always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred names and pronouns are listed on instructors' class rosters. In the absence of such updates, the name that appears on the class roster is the student's legal name.

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### **HONOR CODE**

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the [Honor Code](#). Violations of the Honor Code may include but are not limited to: plagiarism (including use of paper writing services or technology [such as essay bots]), cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty.

All incidents of academic misconduct will be reported to Student Conduct & Conflict Resolution: [honor@colorado.edu](mailto:honor@colorado.edu), 303-492-5550. Students found responsible for violating the [Honor Code](#) will be assigned resolution outcomes from the Student Conduct & Conflict Resolution as well as be subject to academic sanctions from the faculty member. Visit [Honor Code](#) for more information on the academic integrity policy.

### **SEXUAL MISCONDUCT, DISCRIMINATION, HARASSMENT, AND/OR RELATED RETALIATION**

CU Boulder is committed to fostering an inclusive and welcoming learning, working, and living environment. University policy prohibits [protected-class](#) discrimination and harassment, sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or domestic violence), stalking, and related retaliation by or against members of our community on- and off-campus. These behaviors harm individuals and our community. The Office of Institutional Equity and Compliance (OIEC) addresses these concerns, and individuals who believe they have been subjected to misconduct can contact OIEC at 303-492-2127 or email [cureport@colorado.edu](mailto:cureport@colorado.edu). Information about university policies, [reporting options](#), and support resources can be found on the [OIEC website](#). Please know that faculty and graduate instructors have a responsibility to inform OIEC when they are made aware of incidents related to these policies regardless of when or where something occurred. This is to ensure that individuals impacted receive an outreach from OIEC about their options for addressing a concern and the support resources available. To learn more about reporting and support resources for a variety of issues, visit [Don't Ignore It](#).

### **RELIGIOUS HOLIDAYS**

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, please reach email the instructor directly if a conflict arises due to religious observance. See the [campus policy regarding religious observances](#) for full details.

### **MENTAL HEALTH AND WELLNESS**

The University of Colorado Boulder is committed to the well-being of all students. If you are struggling with personal stressors, mental health or substance use concerns that are impacting academic or daily life, please contact [Counseling and Psychiatric Services \(CAPS\)](#) located in C4C or call (303) 492-2277, 24/7.

Free and unlimited telehealth is also available through [Academic Live Care](#). The [Academic Live Care](#) site also provides information about additional wellness services on campus that are available to students.