

Thermodynamics Syllabus

GEO 4938

Instructor: Stephen Mullens – stephen.mullens@ufl.edu

Office: Turlington 3126-B

Office Hours: Mondays, Wednesdays, Fridays at 1:55-2:45pm; or by appointment

Class times:

Mondays, Wednesdays, Fridays at 12:50-1:40pm

Leigh Hall 104

Textbook:

Miller, S., 2015: *Applied Thermodynamics for Meteorologists*. Cambridge University Press, 392 pp.

Also useful – Wallace, J., & Hobbs, P., 2006: *Atmospheric Science: An Introductory Survey*. Academic Press, 504 pp.

Course Objectives – What we’re going to cover:

- Demonstrate knowledge of how thermal energy and the first law of thermodynamics is applied to atmospheric properties and structure.
- Demonstrate knowledge of how entropy and the second law of thermodynamics are applied to basic thermal problems.
- Demonstrate knowledge of phase changes in water and how it affects atmospheric phenomena.
- Demonstrate knowledge of stability and its applications for atmospheric convection.
- Demonstrate an ability to analyze atmospheric soundings using a thermodynamic diagram.

Grading Structure:

10% - Attendance

40% - Homework assignments

20% - Midterm Exam

30% - Final Exam

Grades:

A	90.0-100%	B+	87.0-89.9%	C+	77.0-79.9%	D+	67.0-69.9%
		B	83.0-86.9%	C	73.0-76.9%	D	63.0-66.9%
		B-	80.0-82.9%	C-	70.0-72.9%	D-	60.0-62.9%

No classes on:

January 20 - Martin Luther King Jr holiday

March 2-6 – Spring Break

Tentative Weekly Schedule:

Week	
6-Jan	Introduction
13-Jan	Basic Concepts and Terms
20-Jan	MLK Equations of State
27-Jan	Work, Heat, Temperature
3-Feb	First Law of Thermo
10-Feb	Adiabatic Processes
17-Feb	Exam
24-Feb	Second Law of Thermo
2-Mar	Spring Break
9-Mar	Water and its Phases
16-Mar	Water and Temperature
23-Mar	Statics
30-Mar	Standard Atmospheres
6-Apr	Stability
13-Apr	Applications
20-Apr	[Room for expansion]
27-Apr	Exam

UF POLICIES

ACADEMIC HONESTY:

“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 (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 in this class.”

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.”

EXCUSED ABSENCES:

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

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

“In general, acceptable reasons for absence from or failure to participate in class include illness, serious family emergencies, special curricular requirements (e.g., judging trips, field trips, professional conferences), military obligation, severe weather conditions, religious holidays, and participation in official university activities such as music performances, athletic competition or debate. Absences from class for court-imposed legal obligations (e.g., jury duty or subpoena) must be excused.”

I appreciate that unexpected events occur in all of our lives. If such events occur, and it causes you to attend an event (e.g., funeral, job interview) or a facility (e.g., doctor’s office, courthouse), then you will need to prove that you went to this event/facility on that date by providing some form of documentation of the event. An event program, a doctor’s note, or similar paperwork will suffice. Upon producing this documentation, you will be able to make up the midterm exam or any graded class activities from that date.

“A student should inform the faculty member of the religious observances of his or her faith that will conflict with class attendance, with tests or examinations, or with other class activities prior to the class or occurrence of that test or activity.”

GRADES:

UF policies on grades and GPAs can be found at:

<https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

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 gatorevals.ua.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 ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at gatorevals.ua.ufl.edu/public-results/.”

DISCLAIMER:

This syllabus represents my current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.

HEALTH AND WELLNESS RESOURCES:

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit umatter.ufl.edu/ to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit counseling.ufl.edu/ or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit shcc.ufl.edu/.

University Police Department: Visit police.ufl.edu/ or call 352-392-1111 (or 9-1-1 for emergencies).

ACADEMIC RESOURCES:

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers. writing.ufl.edu/writing-studio/

E-learning technical support: Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services career.ufl.edu/.

Library Support: cms.uflib.ufl.edu/ask various ways to receive assistance with respect to using the libraries or finding resources.

Student Complaints On-Campus: sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/