

Physical Meteorology

Atmospheric Thermodynamics and Cloud Microphysics

1. **Instructor:** Prof. David B. Mechem, 864-5707, dmechem@ku.edu, Lindley 117
2. **Class time and place:** Monday and Wednesday 11:00-12:15 in Lindley 228
3. **Required text:** *Fundamentals of Atmospheric Physics* by Murry L. Salby, Elsevier, 1996, ISBN 0-12-615160-1

Supplemental texts (not required but handy): *Atmospheric Science: An Introductory Survey* by Wallace and Hobbs; *Atmospheric Thermodynamics* by Bohren and Albrecht; *A Short Course in Cloud Physics* by Rogers and Yau

4. **Class website:** <http://courseware.ku.edu/>

5. Topics of study (not exhaustive)

The AMS Glossary of Meteorology defines physical meteorology as, “A subfield of meteorology generally restricted to that part of meteorology not explicitly devoted to atmospheric motions.” The standard physical meteorology topics include, but are not limited to, thermodynamics, cloud physics, atmospheric electricity and magnetism, radiative transfer, and optics. In this course, we will predominantly cover the following two areas:

Atmospheric thermodynamics: Atmospheric composition, ideal gas law, first law of thermodynamics, second law of thermodynamics and entropy, moist processes, atmospheric stratification, stability

Cloud physics: Aerosol and nucleation, condensational growth, coalescence, ice physics, precipitation processes

6. Grading and tentative schedule

- 45% Three hourly exams 9/19, 10/24, 11/28
- 20% Best six of seven problem sets, due 8/29, 9/5, 9/12, 10/3, 10/10, 11/7, 11/14
- 10% Journal article review, due 5 p.m. 12/5
- 25% Comprehensive final exam 12/14 (Friday) 10:30-1:00

Late problem sets will not be accepted. Late journal article reviews will only be accepted in the event of extreme, documented student distress.

A curve, if employed, will be applied after your final course grade is calculated using the percentages listed above.

7. Respect

As a matter of respect to your fellow students and your instructor, please turn your mobile phones off or to silent mode during class. Please no reading newspapers, texting/IMing, listening to your iPod, or emailing during class. If you must leave early, let me know before class, sit near

the door, and quietly leave when you must. If you are late to class, please enter the room quietly with a minimum of disruption.

8. Academic integrity

Students should be familiar with the statement on academic integrity at <http://www.vpss.ku.edu/academic.shtml>. Taking credit for work that is not your own, whether in the form of cheating or plagiarism, will not be tolerated. A student discovered cheating or plagiarizing will be subject to disciplinary action, up to and including receiving an “F” for the course and having a letter sent to the student’s school or college explaining that the grade was given for academic misconduct.

I encourage student collaboration on problem sets, as many students learn best this way. However, each student must turn in his or her own solution! Copying solutions from your fellow students, or allowing them to copy your solution, is a form of cheating.

9. Disability accommodation policy

The KU office of Disability Resources coordinates accommodations and services for all students who are eligible. If you have a disability for which you wish to request accommodations and have not contacted DR, please do so as soon as possible. Their office is located in 22 Strong Hall; their phone number is 785-864-2620 (V/TTY). Information about their services can be found at <http://disability.ku.edu>. Please also contact me privately in regard to your needs in this course.

10. Intellectual property

Course materials prepared by the instructor, together with the content of all lectures and review sessions presented by the instructor are the property of the instructor. Video and audio recording of lectures and review sessions without the consent of the instructor is prohibited. On request, the instructor will usually grant permission for students to audio tape lectures, on the condition that these audio tapes are only used as a study aid by the individual making the recording and are not modified or distributed in any way.