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## ATMS-100 (GEOG-100): INTRODUCTION TO METEOROLOGY

**Instructor:** Prof. Jeff Frame  
**Office:** 111 Atmospheric Sciences  
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**Email:** [frame@illinois.edu](mailto:frame@illinois.edu)  
**Office Hours:** M W 1:00-2:00; T Th 3:30-4:30, or by appointment

**Course Description:** This course introduces students to the essential concepts and principles of meteorology with emphasis on the interpretation of weather maps and charts. By the end of the semester, students will be able to interpret and develop basic weather forecasts as well as explain basic atmospheric phenomena, including mid-latitude weather systems, warm and cold fronts, hurricanes, thunderstorms, tornadoes, blizzards, ice storms, clouds and precipitation processes, daily and annual temperature cycles, and climate change. Questions will be presented in laboratory sections and on tests that stress critical thinking. *Success in this class comes through understanding concepts, not memorizing facts.*

**Credits:** 3 hours

**Satisfies:** Physical Science (Natural Science and Technology) and Quantitative Reasoning II

**Prerequisites:** NONE. Students should know the names and locations of the 50 U.S. States, locations of basic U.S. geographical features (e.g., mountains, oceans), and be able to perform basic algebraic calculations (i.e., solving for  $x$ ).

**Required Text:** *Essentials of Meteorology: An Invitation to the Atmosphere, 7th Edition*, by C. Donald Ahrens. ISBN: 978-1-285-46236-3.

**I-Clicker:** We will utilize the I-Clicker to facilitate lecture-based activities. You must register your I-Clicker (using your NetID) at <http://www.iclicker.com>; **you must reregister even if you have registered your I-Clicker in a previous semester. Failure to do so will result in a grade of zero for all I-Clicker activities.** Students may use any I-Clicker model for this class.

**Website:** We will use Illinois Compass 2g for our course website. You will need to access it on a regular basis for reading assignments, lecture summaries, announcements, and discussion boards. Note that downloading lecture notes from Compass is **not** an adequate substitute for attending class; these notes are intended to provide you with some of the imagery shown during the lectures. Many key details will be missing from these summaries and will be given in class. <http://compass2g.illinois.edu>.

**Lecture Meeting Times:**  
M W, 10:00 - 10:50, Lincoln Hall Theater (Room 1053)

**LAB SECTIONS**

SECTION	DAY	TIME	TEACHING ASSISTANT
ADA	Thurs	9:00 - 9:50	Dan Stechman
ADB	Thurs	10:00 - 10:50	Dan Stechman
ADC	Thurs	11:00 - 11:50	Dan Stechman
ADD	Thurs	12:00 - 12:50	Jake Mulholland
ADE	Thurs	1:00 - 1:50	Jake Mulholland
ADF	Thurs	2:00 - 2:50	Jessie Choate
ADG	Thurs	3:00 - 3:50	Jessie Choate
ADH	Thurs	4:00 - 4:50	Jessie Choate
ADI	Fri	8:00 - 8:50	Emily Hogan
ADJ	Fri	9:00 - 9:50	Emily Hogan
ADK	Fri	10:00 - 10:50	Emily Hogan
ADL	Fri	11:00 - 11:50	Jake Mulholland
ADM	Fri	12:00 - 12:50	Tyra Brown
ADN	Fri	1:00 - 1:50	Tyra Brown
ADO	Fri	2:00 - 2:50	Tyra Brown

All Lab sections meet in room G8A Foreign Languages Building

**TA CONTACT INFORMATION:**

NAME	EMAIL	OFFICE	OFFICE HOURS
Dan Stechman	<a href="mailto:stechma2@illinois.edu">stechma2@illinois.edu</a>	219	M 1:00-2:00; F 10:00-11:00
Tyra Brown	<a href="mailto:tlbrown3@illinois.edu">tlbrown3@illinois.edu</a>	217	T 1:00-2:00; F 10:00-11:00
Jessie Choate	<a href="mailto:choate2@illinois.edu">choate2@illinois.edu</a>	219	M 1:00-2:00; T 11:00-12:00
Emily Hogan	<a href="mailto:eehogan2@illinois.edu">eehogan2@illinois.edu</a>	213	T 1:00-2:00; Th 10:00-11:00
Jake Mulholland	<a href="mailto:jmulhol2@illinois.edu">jmulhol2@illinois.edu</a>	213	T 1:00-2:00; Th 10:00-11:00

All TA offices are in the Atmospheric Sciences Building.

**COURSE WORK**

**I-Clicker Activities:** Short, informal activities designed to increase your comprehension and gauge your understanding will be performed during class using the I-Clicker. I-Clicker activities fully completed will receive a maximum score of 1, while missed activities will receive a score of 0. Since students have legitimate reasons for occasionally missing class, the lowest four I-Clicker will be dropped at the end of the semester. There will be no make-up opportunities if you miss class; missed activities will count toward your dropped activities. Once you use your dropped activities, they are gone (if you miss 4 activities due to skipping class, then have a legitimate reason for missing a 5th activity, you will still take a zero on that fifth activity!). Please register your I-Clicker as soon as possible for full credit; when emailing me regarding I-Clicker Activities, you **MUST** include your I-Clicker ID.

**Lab Activities:** On Thursdays or Fridays, you will meet in a computer room in the Foreign Languages Building to explore meteorological concepts in more detail. These lab activities are designed to help you better understand the material while working collaboratively with others. Homework assignments will occasionally be assigned in lab that will be due at your next lab meeting; each assignment will count as a lab grade. Information covered during lab and on homework will appear on exams. You must attend the lab section for which you are registered. At the end of the semester, your lowest two lab/homework grades (including missed activities) will be dropped. If you have a legitimate reason for missing lab (University-sanctioned field trips, doctor's appointments, illnesses, religious observances, funerals, etc.) and written documentation of your absence, you may contact your TA to make up your missed lab in lieu of taking a dropped lab. All make-up labs must be completed within one week of the lab date listed on the syllabus. Students with non-serious reasons for missing class (e.g., oversleeping, taking a long weekend) will not be permitted to make up their labs. *Lab work that is blatantly copied will receive no credit.*

**Reading Assignments:** Each new topic in the course schedule (see page 6) will have a coordinated set of questions to be completed prior to that day's lecture. There are 25 reading assignments that each contain 6 questions whose answers can be found in the required text, specifically in the range of pages given for a particular topic. These assignments allow for an initial introduction to the material that will then be enhanced through lecture and class discussion. These assignments must be completed online via Compass by the specified due date and time (usually 10am on the day of lecture). At the end of the semester, your lowest four Reading Assignment grades will be dropped. Late reading assignments will not be accepted, regardless of the reason. Please make arrangements to acquire a copy of the textbook early; the first reading assignment is due before class on Wednesday, August 27!

**Exams:** There will be two in-class midterm exams during the semester and a third exam held on the last day of classes. The exams are not designed to be cumulative; however, it is the nature of science courses that the concepts covered early in a course are often necessary for a complete understanding of the materials covered near the end of a course. The focus of any exam will be on the material covered since the previous exam. **You are required to take exams during the scheduled time. Exams cannot be made up except in extremely unusual circumstances and absolutely must be cleared with me in advance.** Please bring your I-Card to the exams.

**Exam Dates:** Monday, September 29  
Monday, October 27  
Wednesday, December 10 (**LAST DAY OF CLASSES!!**)

**Grading:** Your grade will be calculated as follows:

10% I-Clicker Activities	A+	≥ 97%	C	68 - 71.99%
25% Labs	A	91 - 96.99%	C-	65 - 67.99%
20% Reading Assignments	A-	88 - 90.99%	D+	62 - 64.99%
15% Exam I	B+	85 - 87.99%	D	58 - 61.99%
15% Exam II	B	78 - 84.99%	D-	55 - 57.99%
15% Exam III	B-	75 - 77.99%	F	< 55%
	C+	72 - 74.99%		

If you regularly attend class and lab, complete your reading and laboratory assignments, and prepare for your exams, you should not be in danger of failing this class.

## COURSE POLICIES

**Weather Discussion:** Each class (except for exam days) will begin with a brief discussion of the current weather, both in the local area and around the nation. These discussions will serve as a tool to familiarize yourself with many of the weather maps and other products you will be introduced to during the course.

**Email:** I will strive to read and answer all student emails in a timely matter. I likewise expect the same from all of you. Email should be reserved for quick questions, especially after hours. If you have a more significant question or other problem, do not hesitate to stop by my or your TA's office during office hours or to make an appointment. Please include "ATMS-100" in the subject line when emailing me or your TA and either include your name in your email or configure your email client to include your name in the email header. **Please check the syllabus before emailing me or your TA to see if your question has already been answered! Failure to read emails from me or your TA may result in you missing important class announcements, which may negatively impact your grade.** I encourage you to email me with general weather questions and especially interesting weather-related photos you have taken or seen.

**Extra Assistance:** If you have a question or are concerned about the course, please come to my or your TA's office hours or see me after class. You are also welcome to post a question for your TA on the discussion board on Compass. Most TAs also schedule review sessions prior to each exam; the times and locations of these will be announced prior to each exam.

**Missing Class:** Please do not email me for routine absences from class or lab (e.g., illnesses, doctor's appointments, etc.). Your first two missed labs, first four missed I-Clicker activities, and first four missed reading assignments will count toward your dropped total (see above). Use these excused activities wisely; when they're gone, they're gone! In the event of a more serious illness or extended absence (such that you will be exhausting your dropped assignments), please contact me and we will make special arrangements.

**Respect:** You will treat other students and the instructor with respect and will ensure that the classroom is a good learning environment free from disruptions such as extraneous conversation and *the ringing of cell phones*. Please refrain from extraneous activities on the computers (e.g., Facebook) during lab time. Also, please come to class on time. If you must come to class late or leave early, please do so without disrupting the class. Each class will start and end on time.

**Academic Integrity:** You are expected to complete your exams independently. Failure to do so will result in strict disciplinary action. You may work with others on Reading Assignments and Lab Activities, but the final product must be your own. Students turning in assignments that are blatantly copied will receive no credit. Please see [http://www.uiuc.edu/admin\\_manual/code/rule\\_33.html](http://www.uiuc.edu/admin_manual/code/rule_33.html) for more information.

**Special Needs:** To insure that disability-related concerns are properly addressed from the beginning of the course, students with disabilities who require reasonable accommodations to participate in this class are asked to see the instructor as soon as possible in accordance with university policy. For more information, please visit [http://www.uiuc.edu/admin\\_manual/code/rule\\_4.html](http://www.uiuc.edu/admin_manual/code/rule_4.html)

**Lab Schedule:**

	Date	Topic	Readings (7th Edition)
Th/F	08-28/29	Introduction to Weather Data	Appendix C, p 488-489
Th/F	09-04/05	Atmospheric Soundings	Ch 1, p 13; Ch 9, p 259-260; Fig. 9.4
Th/F	09-11/12	Weather and Human Comfort	Ch 3, p 75-77; Ch 4, p 94-97
Th/F	09-18/19	Cloud Identification	Ch 4, p 105-114
Th/F	09-25/26	Climate Change	Ch 13, p 397-427
Th/F	10-02/03	Upper-Level and Surface Weather Maps	Ch 6, p 164-165; 170-174
Th/F	10-09/10	Air Masses and Fronts	Ch 8, p 223-244
Th/F	10-16/17	Mid-Latitude Cyclone Model	Ch 8, p 244-253
Th/F	10-23/24	Weather Forecasting	Ch 9, p 273-279
Th/F	10-30/31	General Circulation and Global Climate	Ch 12, p 367-392
Th/F	11-06/07	Lake-Effect Snow	Ch 8, p 227
Th/F	11-13/14	Hurricane Intensity	Ch 11, p 336-339
Th/F	11-20/21	Severe Thunderstorm Forecasting	Ch 5, p 124-129; Ch 10, p 299-300
Th/F	11-27/28	<b>HAPPY THANKSGIVING – NO LAB!!</b>	
Th/F	12-04/05	Severe Weather Safety	Ch 10, p 315-316

**Lecture Schedule:**

Date		Topic	Readings
M	08-25	Introduction	
W	08-27	Weather, Climate, and the Atmosphere	Ch 1, p 1-10; 15-25
M	09-01	<b>LABOR DAY – NO CLASS</b>	
W	09-03	Vertical Structure of the Atmosphere; Pressure	Ch 1, p 10-15; Ch 6, p 157-164
M	09-08	Temperature and Heat Transfer	Ch 2, p 29-35
W	09-10	Radiation and the Greenhouse Effect	Ch 2, p 35-46
M	09-15	Seasonal and Daily Temperature Variations	Ch 2, p 46-54; Ch 3, p 59-64; 68-73
W	09-17	Atmospheric Moisture	Ch 4, p 85-105
M	09-22	Clouds and Precipitation	Ch 5, p 130-148
W	09-24	Climate and Climate Change	Ch 13, p 397-427
M	09-29	<b>EXAM I</b>	
W	10-01	Forces; Upper-level charts	Ch 6, p 164-170
M	10-06	Upper-level and surface winds	Ch 6, p 170-174
W	10-08	Air Masses and Fronts	Ch 8, p 223-244
M	10-13	Middle-Latitude Cyclones: Weather	Ch 8, p 244-246; 247
W	10-15	Middle-Latitude Cyclones: Development	Ch 6, p 174-176; Ch 8, p 246-250
M	10-20	Middle-Latitude Cyclones: Life Cycle	Ch 8, p 250-253
W	10-22	Weather Forecasting	Ch 4, p 114-118; Ch 7, p 186-188; Ch 9, p 257-283
M	10-27	<b>EXAM II</b>	
W	10-29	El Nino and Southern Oscillation	Ch 7, p 211-218
M	11-03	Hurricanes: Introduction, Formation, and Structure	Ch 11, p 333-337; 339-347
W	11-05	Hurricanes: Intensification and Winds	Ch 11, p 337-339
M	11-10	Hurricanes: Societal Impacts and Forecasting	Ch 11, p 347-362
W	11-12	Atmospheric Stability and Thunderstorm Development	Ch 5, p 123-129
M	11-17	Ordinary Thunderstorms	Ch 10, p 287-291; 301-303
W	11-19	Thunderstorm Complexes	Ch 10, p 291-297
M	11-24	<b>HAPPY THANKSGIVING – NO CLASS!!</b>	
W	11-26		
M	12-01	Thunderstorm Hazards: Lightning, Hail, and Flooding	Ch 5, p 148-152; Ch 10, p 301-302; 303-311
W	12-03	Supercell Thunderstorms	Ch 10, p 297-300
M	12-08	Tornadoes	Ch 10, p 311-328
W	12-10	<b>FINAL EXAM – IN CLASS</b>	