

GEOG 570-01

CLIMATOLOGY

Fall 2008

Dr. Mary Lemcke

Welcome to Climatology!

There are few topics in the media today that evoke as much passion and controversy as the state of earth's climate. The purpose of this course is to introduce you to the study of earth's climate and its driving forces. In this course, we will discuss, examine, and analyze the primary elements used to describe the long-term, average state of the atmosphere from a global perspective. Variability in the spatial and temporal distribution of these elements will be common theme.

The course will focus on the two main elements used to describe earth's climate: energy and water. We will begin with the sources and transfers of energy through the atmosphere, followed by the exchange of water between the earth's surface and atmosphere. Climatology is an interdisciplinary science. Therefore, an interdisciplinary approach will be used to investigate the exchange of energy and mass between earth's surface and the atmosphere. This approach will include data collection and analysis, mathematical models, and discussions of the physical, chemical, and biological processes that influence climate. Homework assignments will provide hands on experience collecting, using, and analyzing climate data from a variety of locations, highlighting the spatial and temporal variability in the global distribution of energy and water. Climate classifications are attributed to a location based on the long-term, average distribution of energy and moisture. Using our knowledge of energy and moisture, we will close the semester with a survey of climate types using Koppen's climate classification.

I hope you enjoy this course and take with you a better understanding of the natural environment that surrounds you. Do not hesitate to contact me with any questions or comments you may have about this course.

BASICS

TIME & PLACE	Tuesday-Thursday 3:40-5:00 pm 253 DeMeritt Hall	
INSTRUCTOR INFO	Dr. Mary D. Lemcke 102A Huddleston Hall	Mary.Lemcke@unh.edu (603) 862-3136
OFFICE HOURS	Monday/Wednesday Tuesday/Thursday	10:00-11:00 am 1:30-2:30 pm
BLACKBOARD	All course documents and powerpoint lectures will be located under Course Documents on Blackboard.	
TEXTBOOK	Hartmann, D.L., <i>Global Physical Climatology</i> , 1994 (Recommended) Lutgens, F.K. and E.J. Tarbuck, <i>The Atmosphere</i> , 10 th Edition (Recommended)	
MATERIALS	Calculator with trigonometric functions (sin, cos, tan etc...) Ruler with English and metric units	
ACCESSIBILITY	In accordance with university policy, if you have a documented disability and require specific accommodations, notify me at the beginning of the semester or prior to the assignment of course material for which an accommodation is required.	
UNIVERSITY POLICIES	All students should know and understand university policies and procedures regarding academic performance including, attendance and academic dishonesty. If you are unfamiliar with these policies, please refer to the University of New Hampshire Student Rights, Rules, and Responsibilities for more information.	
COMMENTS	The following procedures, policies, and schedules may change during the course semester. Any changes will be announced in class and posted on blackboard. Announcements may also be distributed via email. It is your responsibility to check your university email account and blackboard regularly.	

GRADING PROCEDURES

GENERAL

All coursework submitted for evaluation must include your name and section number. Any paper submitted without a name will be given a "0". Any paper submitted without a section number will lose 1 point. This rule applies to tests and assignments. Failure to follow directions may also result in a point deduction.

EXAMS

You will have **two exams** in this course, a midterm exam and a final exam, each worth 25 % of your final grade. Given the comprehensive nature of the material covered in this course, the final exam will be comprehensive, however, it will be oriented toward the section of the course most recently presented. Exams will only include material covered in lecture and on assignments. The exam format will include short-answer and essay questions.

ASSIGNMENTS

You will be assigned approximately **ten homework assignments** based on material covered in lecture. The assignments together are worth 50 % of your final grade. I encourage you to work in groups and utilize the textbook and lecture notes to complete each assignment. However, each student must turn in his/her own, original work. Assignments are due at the beginning of or before class on the due date indicated on the assignment. No late work will be accepted unless prior arrangements have been made.

FINAL GRADES

Final grades will be determined based on your performance on exams and laboratory assignments. Final grades will be assigned using the following grade distribution:

A	93 %	B	83 %	C	73 %	D	63 %
A-	90 %	B-	80 %	C-	70 %	D-	60 %
B+	87 %	C+	77 %	D+	67 %	F	<60 %

Consideration of improvement, effort, and attendance may be taken into account when determining your final grade. Final grades may also be curved depending upon class performance. However, **no extra credit** will be offered in this course ... so don't ask.

CLASS CONDUCT

- GENERAL** Being a student is your profession and you are expected to conduct yourself in a professional manner concerning all matters of this course.
- COMMUNICATION** All forms of communication directed toward your instructor and classmates should be conducted in a professional manner. Emails should be addressed appropriately, contain complete sentences, capital letters, and proper punctuation. All communication directed toward your instructor should contain a subject heading, your name, the course and section number.
- ATTENDANCE** Attendance in lecture is not mandatory but is highly recommended. It has been shown that students who attend class regularly perform better in class than those who do not. I do not make my class notes available to students so if you miss a class you, and only you, are responsible for any missed material.
- TARDINESS** Tardiness is incredibly disruptive and rude, so be on time. Also, all announcements will be made at the beginning of class. If you are late you, and only you, are responsible for any missed material.
- MISSED WORK** Each student must receive equal opportunity to demonstrate his/her comprehension of course material. Therefore, all students will take exams and submit assignments on the same day. No make-up exams will be given, however, exceptions will be made for:
- 1.) Absences in which prior arrangements have been made. Such arrangements must be made at least one week in advance of the absence.
 - 2.) Absences due to family or medical emergencies in which a university approved absence as been granted.
 - 3.) Absences due to serious illness or personal medical emergency accompanied by a doctor's note.
- In all cases, it is entirely up to you to make arrangements to complete any missed assignments or exams. In the case of an excused absence without prior arrangements you must notify me within 48 hours of the scheduled exam or assignment. If you fail to receive approval for a make-up exam or late assignment within this time frame, or have an unexcused absence, you will not be allowed to make-up the exam or assignment for any reason and will be given a grade of "O" for the missed exam or assignment.
- ELECTRONIC DEVICES** The use of cell phones, pagers, walkie-talkies, mp3 players, video games, electronic pets etc... is prohibited while in class. You may use a computer in lecture for note taking purposes only. A calculator is the only electronic device that can be used on exams. Cell phones may not be used as calculators.

CLASS SCHEDULE

WEEK	LECTURE TOPIC	HOMEWORK TOPIC
Sep 1	Chapter 1*: Introduction to Climate	Atmospheric Structure
Sep 8	Chapter 1*: The Climate System	
Sep 15	Chapter 2*: Solar and Terrestrial Energy	Atmospheric Longwave Emission
Sep 22	Chapter 2*: Incoming Solar Radiation	Modeling Solar Radiation
Sep 29	Chapter 2*: Global Atmospheric Energy Balance Chapter 3*: Electromagnetic Radiation	Modeling Radiation - Planck's Law
Oct 6	Chapter 3*: Absorption, Emission, & Reflectivity	Absorption and Scattering
Oct 13	Chapter 3*: Atmospheric Composition and Earth's Energy Balance Midterm Exam (Ch 1-3) - 10/16	
Oct 20	Chapter 4*: Surface Energy Balance	Albedo
Oct 27	Chapter 4*: Distribution of Surface Energy	Surface Energy Balance
Nov 3	Chapter 5*: Hydrologic Cycle Earth's Water Balance	Modeling the Land-Surface Water Balance
Nov 10	<i>No Class 11/11</i> Chapter 5*: Water Balance Cont.	
Nov 17	Chapter 5*: Evaporation and Transpiration	Modeling Potential Evapotranspiration
Nov 24	Chapter 5*: Terrestrial Water Balance <i>No Class 11/27</i>	
Dec 1	Chapter 15**: Climate Classification & Controls	Climate Classification
Dec 8	Chapter 15**: World Climates	
Dec 15	Final Exam (Ch 4, 5, & 15) - 12/19, 6-8 pm	

* Hartmann

** Lutgens and Tarbuck

***NOTE: Dates and topics may change. Any changes made to the schedule will be announced in class and posted online. It is your responsibility to be aware of these changes.