

**I. IDENTIFYING INFORMATION**

*Course:* GEO 131 Weather and Climate (3 hrs) Must take GEO 111 for lab science credit

*Instructor:* Dennis Netoff

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M.A. and Ph.D. University of Colorado, Boulder, CO

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*Hours:* to be announced

*Prerequisites:* none

*Text:* Gillespie, Netoff, and Tiller, 2006, *eWeather and Climate* ( **CD incl. with lab manual**)

*Lab Manual:* Netoff, *Weather and Climate* (2003 ed.)

*Other Materials:* notebook, pen, pencil, paper, calculator

**II. GENERAL COURSE DESCRIPTION**

The basic concepts of meteorology and climatology are introduced. Atmospheric temperature, pressure, winds, moisture, and air masses and storms are systematically covered, followed by an overview of the major climates and ecosystems of the earth. Environmental problems are considered where pertinent.

**III. COURSE OBJECTIVES**

The student should be able to (1) demonstrate a basic knowledge of patterns of atmospheric temperature, pressure, circulation, moisture, airmasses, storms and global climates, (2) analyze selected types of weather data and weather maps (3) interpret a variety of climatic data.

**IV. GRADING POLICIES**

**Three exams** will be given, each carrying 1/3 of the course grade. Labs are separate. **All exams are 100 questions and 50 minutes long (incl. final).** All exams require Scantron 882ES forms. No extra credit. Exams focus on material from the lectures and text and **emphasize** material from the previous 5-week module.

**All exams must be taken.** Failure to take all lecture exams results in automatic course grade of "F".

Grading scale: 85-100% = A; 75-84% = B; 60-74% = C; 50-59% = D

Students with a disability which may affect their academic performance can arrange for a conference with the instructor *within the first two weeks* of the semester in order that appropriate strategies can be considered.

**V. ATTENDANCE POLICY**

The University requires each instructor to keep a record of student attendance. Attendance will be taken at the beginning of the hour. **Tardies count as absences.** This class operates under the premise that an important part of the learning process takes place in the lecture portion of the course. Therefore, class attendance and participation are strongly encouraged.

**Nine class hours of absence are allowed without penalty (6 T-day classes, 9 M-day classes). Absences in excess of 9 class hours result in course failure; I will not grade exams of students who have exceeded the absence limit.**

**VI. CLASS CONDUCT**

Any individual action that is perceived to be detrimental to the learning environment of the class will receive one warning then will be dropped from the class. This includes such things as **excessive talking, excessive tardies, sleeping, leaving class during lecture, interrupting the lecture, use of cellular phones**, etc.

**VII. CHEATING, DISHONESTY, AND PLAGIARISM**

.....will not be tolerated, and may, as a minimum, result in course failure

- VISITORS

- Visitors (family, friends, etc.) are allowed in class *only by pre-arrangement* with the instructor

## IX. COURSE CONTENT

**Overview** (CD, Chapter 1.... the CD is a 450+ page text and is included with the lab manual in a pocket)  
Earth's place in the universe  
maps - (read lab manual, Chapter 1)

**Air temperature** (CD, chapter 2)

solar radiation -- nature, properties, fate  
factors controlling radiation absorbed  
insolation -- earth-sun relationships RRIP  
nature of absorbing medium -- blackbody radiators  
wavelength of radiation--selective absorbers, greenhouse effect  
heating and heat-transfer processes  
vertical, horizontal and temporal variations

**Air pressure and winds** (CD, chapter 3)

causes of atmospheric pressure and importance  
measurement and forms of expression  
vertical changes in pressure  
horizontal -- mechanical vs. thermal origin  
wind direction and speed  
high and low pressure cells (anticyclones and cyclones)  
global pressure and wind systems  
local wind systems  
upper level winds and jetstreams

**EXAM #1** (approx. at end of 5<sup>th</sup> week of classes) 100 questions; 50 min. length

**Moisture in the atmosphere** (CD, chapter 4)

uniqueness of water  
humidity  
cooling processes -- radiation, conduction, mixing, adiabatics  
mechanisms to create uplift -- convection, convergence, orographic, frontal  
conditions that favor or discourage uplift -- stability vs. instability  
condensation and precipitation  
forms -- dew, fog, clouds, frost  
precipitation processes  
forms of precipitation  
global patterns of precipitation

**Airmasses and storms** (CD, chapter 5 and 6)

airmass source regions and characteristics  
modifications of airmasses  
North American airmasses  
fronts and frontal cyclones -- origin, development, types  
violent storms -- thunderstorms, tornadoes, hurricanes

**EXAM #2** (approx. at end of 10<sup>th</sup> week of classes) 100 questions; 50 min. length

**Climate and ecosystems** (CD, chapter 7)

climatic classification  
climatic types and climate -- vegetation -- soil relationships

**Climatic change** (CD, chapter 8)

Quaternary climatic change -- the evidence, possible causes  
climatic future of the earth

**EXAM #3** (100 question, 50 minute final during scheduled final exam hour)