

COURSE SYLLABUS: GSC 125-01: Weather and Climate

Instructor: Dr. Haluk Cetin

Office: Blackburn 309

Office Hours: 11:15AM-12:15PM T-Th or by appointment

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Lecture: 9:30 am - 10:45 am

Tuesday & Thursday, Blackburn Science Building 312

Laboratory: 3:30 pm - 5:20 pm

Tuesday, Blackburn Science Building 306B

DEPARTMENT: GEOSCIENCES

COURSE PREFIX: GSC

COURSE NUMBER: 125-01

CREDIT HOURS: 4

I. TITLE:

Weather and Climate

II. COURSE DESCRIPTION AND PREREQUISITE(S):

This course is an introduction to the dynamics of the atmosphere and how humans interact with and are influenced by atmospheric processes and climatic variations. It provides the student with a fundamental knowledge of meteorology and climatology and how they are connected to activities on earth.

Prerequisite(s): None

III. COURSE OBJECTIVES:

The student will be able to

A. To learn the basic elements of weather and how they are quantified.

B. To understand the "Energy Budget."

C. To see our role in the production of air pollutants and the subsequent clean-up of the atmosphere.

D. To produce fundamental weather forecasts by using internet accessible data.

E. To become familiar with some of the criteria used to classify climates and the consequences of long-term climate variability.

F. To understand human impact on global climate.

G. To produce a simple 24-hour forecast for several cities of the U.S. using basic weather parameters and satellite imagery.

IV. CONTENT OUTLINE:

Weather, Climate, and Atmosphere

Chapters 1&15/Lecture notes

Monitoring the Weather

Chapter 1

Atmosphere: Origin, Composition, and Structure

Chapter 2

Solar and Terrestrial Radiation, Remote Sensing

Chapter 3/Lecture notes

Motions of the Earth - Earth/Sun Relationships

Lecture notes

Heat, Temperature, and Atmospheric Circulation

Chapter 4

Air Pressure, Wind and Weather

Chapter 5&8

Humidity, Saturation, and Stability

Chapter 6

Clouds, Precipitation, and Weather Radar

Chapter 7

Light and Sound in the Atmosphere

Chapter 14

Atmospheric Circulation and Weather Systems

Chapters 9&10

Thunderstorms and Tornadoes

Chapter 11

Weather Analysis and Forecasting

Chapter 13

Climate and Climate Change

Chapter 15/Lecture notes

El Nino and La Nina

Lecture notes

Climate case studies

Lecture notes

NOTE: Any changes to the schedule will be announced in advance.

V. INSTRUCTIONAL ACTIVITIES:

A. Lectures

B. Web-based movies

C. Powerpoint Slides

D. Assigned Readings

E. Computer activities/WWW exercises

F. Homework Assignments

G. "Current Weather Studies" Web activities, which will be available at the AMS website. Your 'Weather Studies Investigations Manual' activities are already in your lab manual. (login/password information will be provided)

VI. FIELD, CLINICAL, AND/OR LABORATORY EXPERIENCES:

The laboratory is meant to be an integral part of this course. Laboratory exercises are coordinated with lecture material. Most laboratory exercises will incorporate Internet resources to view and discuss new earth science information. For the labs, we will use "**Weather Studies Investigations Manual**" and "**Current Weather Studies**" Web activities, which will be available at the AMS website. The URLs are provided below. Your 'Weather Studies Investigations Manual' activities are already in your lab manual.

VII. TEXT(S) AND RESOURCES:

Required Text: Weather Studies-Textbook and Investigations Manual, 2014-2015 and Summer 2015 edition. American Meteorological Society, Copyright:2014. (available through MSU University Store and Bradley Bookstore in Murray)

Website URLs: <http://www.ametsoc.org/amsedu/login.cfm>
or <http://amsedu.ametsoc.org/amsedu/login.cfm> (this is a mirror site)
(login/password information will be provided)

Resources:

- A. Printed Material
- B. Web-based videos
- C. Computer resources/demonstrations
- D. Web resources
- E. Powerpoint Slides
- F. Online weather studies web-site and related meteorological links.

VIII. EVALUATION AND GRADING PROCEDURES:

The grade in the course will be calculated on the basis of three exams, 100 points each; 100 points for weekly homework assignments and 100 points for quizzes; 200 points for laboratory assignments. Any changes to the grading procedure will be announced.

Grading:

A= 90 - 100% of total points B= 80 - 89% of total points C= 70 - 79% of total points
D= 60 - 69% of total points E= less than 60% of total points

IX. ATTENDANCE POLICY:

Students are expected to adhere to the MSU Attendance Policy outlined in the current MSU Bulletins.

Regular transmission of weekly activities is required. Individual Make-up exams may be given depending on circumstances.

Homework turned in after the due date but before the next assignment will receive 80 percent of the grade. Homework will not be accepted that is more than one week late.

X. ACADEMIC HONESTY POLICY:

Cheating, plagiarism (submitting another person's material as one's own), or doing work for another person which will receive academic credit are all impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure or give help during an examination, the unauthorized copying of examinations, assignments, reports, or term papers, or the presentation of unacknowledged material as if it were the student's own work. Disciplinary action may be taken beyond the academic discipline administered by the faculty member who teaches the course in which the cheating took place.

Note: Faculty reserve the right to invalidate any examination or other evaluative measures if substantial evidence exists that the integrity of the examination has been compromised.

XI. NON-DISCRIMINATION POLICY STATEMENT:

Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. For more information, contact the Executive Director of Institutional Diversity, Equity and Access, 103 Wells Hall, (270) 809-3155 (voice), (270) 809-3361 (TDD).

XII. Other required departmental or collegiate committee information

This syllabus is subject to revision if deemed necessary by the instructor. Any changes to the syllabus will be announced in advance.