

# Weather and Climate Syllabus - Lab Portion

PGEOG 13000 1L01

Spring 2022

Instructor: Cloe Mueller

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Office Hours: Weds 10-11am

Class Hours: Mon 11:10am-1pm

Meeting ID - 870 2223 1464

Class Room: HN 1028

Passcode - 290633

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## Course Description

This is the lab section of the PGEOG 13000 course which has both a lecture and a lab component worth in total 4.0 credits (5 hours). The course fulfills the Hunter Common Core Section C. Life and Physical Sciences and the General Education Requirements GER 2/E (Natural Science). There are no prerequisites. The course (both lecture and lab) provides an introduction to meteorology and atmospheric sciences. It focuses on the structure and composition of the atmosphere and the elements that are central to understanding its behavior, such as pressure, humidity, and temperature. The course examines the development of a variety of weather phenomenon, such as cloud formation, fronts, storm systems and severe weather, and reviews basic weather forecasting and analysis techniques. The course explores short- and long-term climate processes and their impact on the environment and people. The course also demonstrates how different regions of the world have been and will be impacted by climate change in the past, present and future. This is a laboratory science course and the concepts covered in lecture will be demonstrated with hands-on and technology-based activities using a variety of exercises, observations, and experiments. In the labs we will be using some basic mathematical formulas and calculations and students are expected to have a basic understanding of mathematics through algebra.

## Required Materials

Exercises for Weather and Climate Plus Mastering Meteorology with eText – Access Card Package, 9/E, Greg Carbone, University of South Carolina, ISBN-10: 0134035666, ISBN-13: 9780134035666. Prentice Hall, Copyright: 2016, Spiral Bound with Access Card; 256 pages (\$96.07).

- Please make sure you have a copy of the lab manual by the second class (February 7th) and it must be a ninth edition.

- I recommend that you purchase a physical copy of the lab manual, because you must complete and turn in the lab exercises found in the book. There is a digital copy (i.e. Vitalsource/Coursesmart ebook) available for purchase but there are major formatting issues when printing the labs and I will NOT accept these versions.
- The lab text is on reserve in the library (Call Number: QC981 .C34 2016). You can photocopy and use this as long as there is no writing in it. Please note that I do not know the condition of this book. If it is missing pages, you are still responsible for the work. You may also rent the book as long as you can print the activities. A used book with writing in it is NOT acceptable.

## Prerequisites

There are no prerequisites for this course.

## Course Objectives

Successful students:

1. Describe, explain, and appreciate the interconnected nature of the Earth systems through effective oral and written communication.
2. Explain the relationship between the Sun and the Earth and the Sun's planetary impact on weather and climate.
3. Recognize the interaction between the elements of the atmosphere, including a) the composition and the structure of the atmosphere; b) the atmospheric and oceanic circulation processes, and fronts, storm systems and severe weather; c) interpret methods of weather forecasting and create basic weather maps.
4. Distinguish, analyze, and evaluate climate processes and how they relate to the past, present and future climate, and their impact on biogeography, including a) current technology and science in predicting meteorological outcomes; b) natural and anthropogenic climate change; c) the impact created by shifts in climate zones.

## Course Structure

### Grading Policy

The lab portion is worth 30% of your total PGEOG 13000 grade. Below is the breakdown of your lab grade (out of 100%).

- 70% of your grade will be determined by the lab exercises.
- 10% of your grade will be determined by attendance.
- 10% of your grade will be determined by participation in lab.
- 10% of your grade will be determined by completion of the weekly questionnaire during class time.

## Lab Exercises

You will have one week to complete each lab exercise (see schedule at the bottom of the syllabus). After the brief, complementary lecture at the beginning of lab, you will have the remainder of the two hours to begin the lab exercise and ask me questions. You then take the lab exercise home and must complete it before the next class. You are required to hand in a physical copy of your lab exercise in person at the start of each lab period. You must hand in your own work (your friend cannot turn in your copy for you). I will not accept late work and I will only accept an electronic version of your lab provided you email me BEFORE the start of lab with a valid excuse (i.e. you tested positive for COVID). At the end of the semester, I will drop your lowest lab grade.

I highly encourage you to work in groups on the lab exercises. I believe that collaboration is crucial, especially in a learning environment. That being said, I will not condone cheating or plagiarism. Working together means thinking through concepts, asking each other questions, and helping each other. You may not copy each other's answers nor can you copy the answers from Google/Chegg. If I determine that any cheating or plagiarism has occurred, you will receive a zero on your lab exercise and I will report this matter to your lecture professor.

## Attendance

Attendance is mandatory for the lab section of this course. At the start of each class, I will record your attendance. I will allow for one excused absence, but after one absence, you will lose 1% of your lab score for each additional absence.

## Participation

I just want to see that you are thinking through the material and making an effort to understand. Participation is a means of learning and sharing, not a way to test whether you are right or wrong. A good indicator as to whether or not you are participating enough is whether I know your name by the end of the semester. Participation includes, but it is not limited to, asking and attempting to answer questions in class, coming to my office hours, coming to speak to me during class, emailing me questions, etc.

## Weekly Questionnaire

Each week you must complete a short, 5-minute questionnaire via Google Forms at <https://forms.gle/ETJhJTEeP5k9TboW6>. You must complete the questionnaire anytime during the two hours of class time (not before, not after), but I will remind you to do so when my lecture is done and before you begin your lab exercises. The goal of this questionnaire is for you to reflect on the course material of the week and allow us (the lecture professor and myself) to understand what you do and don't understand.

## **Course Policies**

### **COVID-19 Policy**

The lab portion of this course will be in person, which means you will be required to WEAR A MASK AT ALL TIMES during class. Your mask should cover your mouth and nose completely. There is no eating allowed during lab and please keep drinking (water, coffee, tea, etc.) to a minimum. As we all know, COVID likes to surprise us, which means we need to be prepared to move to remote learning at all times. If we switch to an online format, I will update you as quickly as possible, so you should check your Blackboard and Hunter email regularly. If you are not feeling well, have been exposed to COVID, or test positive for COVID, then DO NOT COME TO CLASS. You should send me an email immediately explaining your situation and if the circumstances are sufficient, I will accept an emailed version of the lab exercise that is due (by the start time of class and no later).

### **Hunter College Policy on Academic Integrity and Honesty**

Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

### **Accommodations for Disabilities**

In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical, and/or Learning) consult the Office of AccessABILITY, located in Room E1214B, to secure necessary academic accommodations. For further information and assistance, please call: (212) 772-4857 or (212) 650-3230.

### **Hunter College Policy on Sexual Harassment**

In compliance with the CUNY Policy on Sexual Misconduct, Hunter College reaffirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationships. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College.

a. Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).

b. All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) or

Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

## Tentative Schedule

The schedule is tentative and subject to change. These changes will be announced in class and through Blackboard announcements. Make sure to check Blackboard regularly.

### Week 01: January 31

- Lab of the Week: Lab 1 Not in Manual (NM), available on BB - *answer all questions except for 4, 11-13 in "Dimensions & Units" section*

### Week 02: February 7

- Lab Due: Lab 1 NM
- Lab of the Week: Lab 1 "Vertical Structure of Atmosphere" - Q 1-22

### Week 03: February 14

- Lab Due: Lab 1
- Lab of the Week: Lab 2 "Earth-Sun Geometry" - Q 1-6, 9-19

### Week 04: February 21

- No class

### Week 05: February 28

- Lab Due: Lab 2
- Lab of the Week: Lab 3 & 4 "The Surface and Global Energy Budget" - *Lab 3: Q 1-15, Lab 4: Q 1-5, 11-15*

### Week 06: March 7

- Lab Due: Lab 3 & 4
- Lab of the Week: Lab 5 "Atmospheric Moisture" - Q 10-29

### Week 07: March 14

- Lab Due: Lab 5
- Lab of the Week: Lab 6 "Saturation and Atmospheric Stability" - Q 1-16, 18-25

**Week 08: March 21**

- Lab Due: Lab 6
- Lab of the Week: Lab 9 "Weather Map Analysis" - Q 1-9

**Week 09: March 28**

- Lab Due: Lab 9
- Lab of the Week: Lab 10 "Mid-Latitude Cyclones" - Q 1-17

**Week 10: April 4**

- Lab Due: Lab 10
- Lab of the Week: Lab 12 "Thunderstorms and Tornadoes" - Q 1-17

**Week 11: April 11**

- Lab Due: Lab 12
- Lab of the Week: Lab 13 "Hurricanes" - Q 1-17

**Week 12: April 18**

- Spring break

**Week 13: April 25**

- Lab Due: Lab 13
- Lab of the Week: Lab 14 "Climate Controls" - Q 1-22

**Week 14: May 2**

- Lab Due: Lab 14
- Lab of the Week: Lab 16 "Climate Variability and Change" - Q 1-23

**Week 15: May 9**

- Lab Due: Lab 16
- Lab of the Week: Lab 17 "Simulating Climate Change" - Q 1-16

**Week 16: May 16**

- Lab Due: Lab 17