

# PGEOG 130: WEATHER AND CLIMATE

Department of Geography and Environmental Science

Hunter College - CUNY

## COURSE SYLLABUS (SP25)

### **Lecture:**

Term: Spring 2025

Section/MOI: 01/In-person

Day/Time: Tuesdays & Fridays 10:00–11:15am

Room: 510 (North Building)

**Instructor:** Natalie Monterrosa

**Email address:** [nmonterrosa@hunter.cuny.edu](mailto:nmonterrosa@hunter.cuny.edu)

Office: Room 1032HN (Ring doorbell on right)

Office Hours: Tuesdays 1:30 – 2:30pm (in person)

### **Lab Sections & Instructors:**

1L01 Mo 9:30 – 11:20am; Instructor: Francesca Lingo ([Francesca.Lingo@hunter.cuny.edu](mailto:Francesca.Lingo@hunter.cuny.edu))

**1L02 Tu 11:30am – 1:20pm;** Instructor: Natalie Monterrosa ([nmonterrosa@hunter.cuny.edu](mailto:nmonterrosa@hunter.cuny.edu))

**1L03 Tu 4:00 – 5:50pm;** Instructor: Natalie Monterrosa ([nmonterrosa@hunter.cuny.edu](mailto:nmonterrosa@hunter.cuny.edu))

1L04 Th 10:30am – 12:20pm; Instructor: Francesca Lingo ([Francesca.Lingo@hunter.cuny.edu](mailto:Francesca.Lingo@hunter.cuny.edu))

1L06 Mo 11:30am – 1:20pm; Instructor: Francesca Lingo ([Francesca.Lingo@hunter.cuny.edu](mailto:Francesca.Lingo@hunter.cuny.edu))

1L07 Th 8:30 – 10:20am; Instructor: Kelsey parker ([kparker@gradcenter.cuny.edu](mailto:kparker@gradcenter.cuny.edu))

\*Lab is held in room 1028 Hunter North for all lab sections.

### **Contact Policy**

You may email me with any questions you have regarding the lecture material (and lab if I am also your lab instructor). In your email you must include PGEOG 13000 in the subject line (and lab section if emailing about lab). Also, include your full name as it appears in CUNYfirst. In addition, be as descriptive as possible with your question, tell me your thought process, and include any relevant pictures if needed. Furthermore, you **MUST** use your hunter email when contacting me. You can expect to have your email messages returned within 48 hours. If I do not respond within this time frame, please forward the same email again.

### **Course Description**

This course will describe the basic principles and elements that shape and determine our weather and the earth's climate. The course will begin with a discussion of the Earth System, with particular emphasis on the atmosphere. Next, we will discuss the energy that drives all we observe in the atmosphere. The first part of the course will concentrate on describing in some detail the elements that are common to weather and climate: temperature, pressure, moisture, clouds and winds. The second part of the course will, then, concentrate on how all those elements, working together or by combinations, determine the general circulation patterns in the atmosphere and oceans, as well as our weather patterns. Finally, we concentrate on air pollution and the changing climate and in this context; we will discuss some current issues, such as the potential impact that humans have on climate and climate change.

**Note:** Several lab exercises, we will be using mathematical formulas, calculations, and graphs. Lab exercises are designed to further your understanding of these concepts through application and analysis. You are expected to have at least a basic understanding of mathematics through algebra and basic trigonometry.

## Cuny Requirement Designation

This course will fulfill the Common Core Requirement for categories C & D, Life and Physical Sciences and Scientific World.

## Learning Objectives and Outcomes

A student who successfully completes this course can:

- Explain the scientific method and apply it to solve problems in meteorology and climate studies.
- Explain and appreciate the interconnected nature of the Earth systems through effective oral and written communication.
- Identify major geographic features (both physical and human) on map and globe.
- Discuss the relationship between the Sun and the Earth and the Sun's impact on weather and climate.
- Recognize the interaction between the elements of the atmosphere, including (a) the composition and the structure of the atmosphere, and its distribution around the planet, including the basic chemistry and physics of atmospheric processes (b) the atmospheric and oceanic circulation processes, and (c) fronts, storm systems and severe weather with an emphasis on North America.
- Discuss methods of weather forecasting and be able to utilize weather forecasting tools and techniques, as well as interpret and create basic weather maps.
- Recognize and analyze 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.

## Textbooks

### **Lecture Text (Recommended):**

**Lutgens, Tarbuck, Herman, Tasa. *The Atmosphere: An Introduction to Meteorology, 14th edition.* ISBN: 978-0134758589**

The 12th or 13th edition of the lecture text is acceptable. It is ok to rent or buy used. The 13th edition is on reserve in the library (Call Number: QC861.2. L87 2016)

### **Lab Text (Required):**

**Carbone, Greg. *Exercises for Weather and Climate, 9th edition.* ISBN: 978-0134041360**

The lab text is on reserve in the library (Call Number: QC981 .C34 2016). 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 MUST purchase or use the 9th edition of the Lab text. Either a physical copy or online copy will do. All work will be submitted on blackboard. A used book with writing in it is NOT acceptable. Also be wary of missing pages in used editions. Optional materials: Calculator, pencils, paper, protractor, colored pencils.

## Classroom Policies:

It is important that you attend every session to work on lab exercises and to prepare for Blackboard assignments. If the material is covered in class, there is a high probability it will be a question on the Blackboard assignment. In addition, there will be a short lecture (20 – 30 minutes) at the beginning of every session. I encourage you to ask questions and participate in discussions during this time. Please adhere to the following guidelines during class sessions:

- Lecture and class notes should be taken using pen or pencil and paper.
- All cell phones must be silenced.
- Texting and other non-class related smart phone activities are not allowed. Students should quietly excuse themselves from the classroom if substantial external electronic communication is required.

- Tape recording is not permitted (proper documentation must be provided to grant an exception)
- Laptops, iPads, tablets, and other electronic devices may be used **ONLY** for lab assignments during class time.

**Please be respectful of yourselves and each other.** Inappropriate behavior in our language and/or conduct will not be tolerated. At times we will be working in groups and all students are expected to abide by classroom policies to provide a more productive learning environment.

All people have the right to be addressed and referred to in accordance with their personal identity. In this class, we will have the chance to indicate the name that we prefer to be called and, if we choose, to identify pronouns with which we would like to be addressed. I will do my best to address and refer to all students accordingly and support classmates in doing so as well. If there is a name or pronoun(s) you prefer to be addressed by, please approach me in class, send me an email, or mention it to me privately during office hours and I will add this information to my course roster.

Due to the ongoing COVID-19 pandemic, we must continue to adhere to all guidelines from CUNY. [COVID-19 Info – The City University of New York \(cuny.edu\)](https://www.cuny.edu/coronavirus/). You are no longer required to wear a mask. However, since we will be working in groups, wearing a mask is highly recommended. **If you are not feeling well, please do not come to class.** Send an email and we can discuss how and when you can make up any missed assignments. If you have any other health or wellness related questions or concerns, please let me know as soon as possible so we can find the appropriate resources to help you.

#### **Grading (% of Final Grade):**

ASSESSMENT	DESCRIPTION	WEIGHT (%)
Lab Work	See Lab Syllabus and Instructor	30%
Exam 1	Chapters 1-6	20%
Exam 2	Chapters 7-11	20%
Final Exam	Cumulative	20%
Participation	In class activities	10%
<b>TOTAL</b>		<b>100%</b>

**Method:** This is a combined course, including both lecture and lab. There will be two separate grades given for each component and a final combined course grade. The final lab grade represents 30% of the combined course grade. To calculate your final lab grade, think of it in terms of points (30% = 30 points). For example: If your final lab grade is an 80, you multiply that by .30 (30%). The result = 24. That means you earned 24/30 points for the lab component.

#### **Extra-Credit:**

##### ***Eco-Credits (Outdoor activities):***

Our student club the *Greenbelt Society of Hunter College*, in collaboration with institutions such as the NYC Parks and Recreation Department and the American Littoral Society will be organizing and/or participating in several outdoor activities such as tree planting, restoration, coastal clean-ups and hiking during this semester. See the tentative calendar below. We will discuss in more detail the potential to earn extra credit towards the final lab grade. If you are interested in participating with us or becoming a member, please let me know!

**Lab Assignments:**

Lab exercises from the manual will be completed in class, individually or in groups. All assignments and discussion questions posted on Blackboard (graded) will be due the following week. Due dates will be posted on Blackboard. If you must turn in a physical lab to be graded, please make sure your handwriting is legible, and you use proper grammar in your responses. If you miss a class session, you are still expected to complete the assignments and submit on time. Please let me know if you have any questions or concerns.

You will be allowed **ONE** late lab. Any late labs thereafter will be subject to a 10 point/day penalty (including weekends). No labs will be accepted after the last day of class. Exceptions will be made on a case-by-case basis and must be addressed immediately.

**I take academic responsibility and honesty very seriously.** Please be mindful of assignments and due dates. Although we will be working in groups, your responses must be your own. This includes lab assignments as well as discussion questions given on Blackboard. My penalty for plagiarism or cheating will result in giving you an automatic zero for the assignment for the first time, an F for the course if it is repeated. The college may also take further disciplinary action which can negatively impact your academic standing.

If you find the work challenging or need extra help with lab assignments, there are resources available to help you. Tutoring is normally offered for this course every semester, and I encourage you to utilize it when available. In addition, I will post additional resources after class sessions to assist you in completing the “test” assignment given on Blackboard. I will also be available during office hours and via email if you need further help.

**STATEMENT ON THE USE OF ARTIFICIAL INTELLIGENCE (AI)-BASED TECHNOLOGIES**

- Artificial intelligence-based technologies, such as ChatGPT, must not be used to generate responses for your assignments.
- Unauthorized use of artificial intelligence software or word mixing software to complete assignments or disguise plagiarized work is considered unauthorized assistance in this course.
- Use of an AI text generator when an assignment does not explicitly call or allow for it without proper attribution or authorization is plagiarism.

**HUNTER COLLEGE STATEMENT ON ACADEMIC INTEGRITY**

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 CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures. Plagiarism, dishonesty, or cheating in any portion of the work required for this course will be punished to the full extent allowed according to Hunter College regulations.

**ADA POLICY**

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 MISCONDUCT**

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. [Sexual-Misconduct-Policy.pdf \(cuny.edu\)](#)

### SYLLABUS CHANGE POLICY

Except for changes that affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice. All changes will be announced on Blackboard, by email, and/or in class.

### COURSE CONTENT AND CALENDAR

CHAPTER TITLE
1. Introduction To the Atmosphere
2. Heating Earth's Surface and Atmosphere
3. Temperature
4. Moisture and Atmospheric Stability
5. Forms of Condensation and Precipitation
6. Air Pressure and Winds
7. Circulation of Atmosphere
8. Air Masses

CHAPTER TITLE
9. Mid Latitude Cyclones
10. Thunderstorms and Tornadoes
11. Hurricanes
12. Weather Analysis and Forecasting
13. Air Pollution
14. The Changing Climate
15. World Climates
16. Optical Phenomena of the Atmosphere

### LECTURE SCHEDULE

WEEK	TUESDAY	CHAPTER	FRIDAY	CHAPTER
01	Jan 28	1	Jan 31	2
02	Feb 4	2	Feb 7	3
03	Feb 11	3	Feb 14	4
04	<b>Feb 18</b>	<b>NO CLASS</b>	Feb 21	5
05	Feb 25	5	Feb 28	6
06	Mar 4	6	Mar 7	<b>EXAM 1</b>
07	Mar 11	7	Mar 14	7
08	Mar 18	8	Mar 21	9
09	Mar 25	9	Mar 28	10
10	Apr 1	10	Apr 4	11
11	Apr 8	11	Apr 11	<b>EXAM 2</b>
<b>12</b>	<b>Apr 15</b>	<b>SPRING RECESS</b>	<b>Apr 18</b>	<b>SPRING RECESS</b>
13	Apr 22	13	Apr 25	13
14	Apr 29	14	May 2	14
15	May 6	14	May 9	15
16	May 13	15	<b>May 16</b>	<b>FINALS</b>

## LAB SCHEDULE

WEEK	DATE (TUESDAY)	LAB #	QUESTION #	**REFERENCE CHAPTER(S)
01	Jan 28	Appendix A & B (Lab manual)	All	n/a
02	Feb 4	Lab 1- Vertical Structure of the Atmosphere	1-22	1
03	Feb 11	Lab 2 – Earth-Sun Geometry	1-6, 9-12, 17	2
<b>04</b>	<b>Feb 18</b>	<b>NO CLASS – Follow Monday schedule</b>		
05	Feb 25	Lab 3 - Surface Energy Budget Lab 4 – Global Energy Budget	1-4, 11-15 1-5, 11-15	3-4
06	Mar 4	Lab 5 - Atmospheric Moisture	10-29	4
07	Mar 11	Lab 6 - Saturation and Atmospheric Stability	1-16, 18-25	4
08	Mar 18	Lab 9 - Weather Map Analysis*	1-3, 5, 8	8-9
09	Mar 25	Lab 10 - Mid-latitude Cyclones	1-17	9
10	Apr 1	Lab 12 - Thunderstorms and Tornadoes	1-17	10
11	Apr 8	Lab 13 – Hurricanes	1-17	11
<b>12</b>	<b>Apr 15</b>	<b>NO CLASS - SPRING RECESS</b>		
13	Apr 22	Lab 14 - Climate Controls	1-22	15
14	Apr 29	Lab 16 – Climate Variability and Change	1-23	14
15	May 6	Lab 17 - Simulating Climate Change	1-16	14
16	May 13	Group Activity/Review		
<b>17</b>	<b>May 20</b>	<b>NO CLASS - FINALS WEEK</b>		

\*No Blackboard assignment

\*\*Reference Chapters from: Lutgens, Tarbuck, Herman, Tasa. *The Atmosphere: An Introduction to Meteorology*, 14th edition. ISBN: 978-0134758589