

## Geography 121 – Weather and Climate

Spring 2020

Lecture: [Online](#)

Lab: M 1:50-4:00pm, T 8:00-10:10am, T 10:20am-12:30pm, OR T 12:40-2:50pm – [Online](#)

Instructor: Laura Carnahan  
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Office Hours: [Wed. 1:50pm-3:30pm, or by appointment](#)

### Recommended texts:

1. Elemental Geosystems 8<sup>th</sup> Edition – paperback by Christopherson (ISBN: 9780321985019)  
OR
2. Exploring Physical Geography – paperback by Reynolds (ISBN: 9780078095160)  
OR
3. The Physical Environment: An Introduction to Physical Geography – free online book by Michael E. Ritter (website: [https://www.earthonlinemedia.com/ebooks/tpe\\_3e/title\\_page.html](https://www.earthonlinemedia.com/ebooks/tpe_3e/title_page.html))

\*Other than “Elemental Geosystems,” these books may not be in the University bookstore. In all cases, you might be able to find them cheaper online. You do NOT need all of them! Only one!

### Required texts:

1. Physical Geography I – Weather and Climate Lab Manual – UWO (ISBN: 9788450059502)

### Liberal Arts Education:

By enrolling at UW-Oshkosh, you have signed up for a liberal arts education. This type of education is designed to provide you with the opportunity to discover the world around you through different viewpoints. This course is intended to provide you with a basic understanding of the components and processes that create the weather and climate on the earth. Most of you will not go on to further study in this topic, but an understanding of these principles will allow you to make better sense of the world around you. This course is another piece of the puzzle that is the world we inhabit. Each area that you study such as art, history, psychology, math, biology, etc. provides you with another part of the earth’s human or physical landscape. The strength of the liberal arts approach is that it gives you the opportunity to see how all the pieces, although seemingly unrelated, fit together. Hopefully you will be able to think about the weather and climate information we learn about in this class, and consider how it affects the other subject areas you are studying.

### Course Description and Expectations:

This class is “an introductory study of the physical processes and spatial patterns of the earth's weather and climate and the impacts of climate on vegetation.” The objective of this course is to introduce you to the processes which take place in our atmosphere. You will gain a solid basic understanding of the background and characteristics of the processes which determine the daily weather situation as well as the long term climates on our planet. This knowledge is fundamental to the understanding of numerous phenomena which you are confronted with on a daily basis. You will, for example, find out why it is so cold in Wisconsin in winter, how a tornado or hurricane works, why the wind blows from a certain direction, why we sometimes get polluted air in the city, why some clouds lead to precipitation and others not, etc.

You will increase your knowledge of the physical and natural world, and develop valuable skills including critical thinking, quantitative literacy, technical literacy, objective evaluation of theories and assumptions, and problem solving. These are the Essential Learning Outcomes for this course. (Geography majors, this class will address the first Student Learning Outcome for the Geography program. To find more info on the Geography department's Student Learning Outcomes, please visit the Geography department website.)

**Communication:**

I often will send emails regarding this class. I will also be using Canvas heavily. Check your email regularly, and check the Canvas site regularly. If you have questions, feel free to contact me. There are a number of different ways to contact me - [e-mail](#), [online video chat](#), [etc](#). I try my best to be approachable. You can expect a response to your emails from me within 24 hours during the week, and I will try to have grades posted in a timely manner. Please ask me for help if you need it. I don't want to see anyone left behind in this class. Don't wait until it is too late. I want this class to be a source of learning and enjoyment, not stress.

**Center for Academic Resources (CAR):**

The Center for Academic Resources (CAR) provides free tutoring for students in most undergraduate classes on campus. Check the Tutoring List page on CAR's website ([www.uwosh.edu/car](http://www.uwosh.edu/car)) for a list of tutors. To schedule a tutoring session, simply email the tutor, let him/her know what class you are seeking assistance in, and schedule a time to meet. Tutoring takes place [online](#). You will have to contact CAR to see exactly how that is done.

The Center for Academic Resources also provides support to students through **Supplemental Instruction** and the Peer Educator program. We are lucky enough to have a Supplemental Instruction leader paired with this class. Attendance at Supplemental Instruction sessions is NOT required, though attendance at SI sessions has been shown to lead to higher grades and better understanding of the material.

Supplemental Instruction days/times/locations:

Monday	7:00pm-8:30pm	<a href="#">Online (Collaborate Ultra)</a>
Wednesday	7:00pm-8:30pm	<a href="#">Online (Collaborate Ultra)</a>

Supplemental Instruction leader: Sophie Drew ([drews16@uwosh.edu](mailto:drews16@uwosh.edu))

**Special Accommodations:**

Reasonable accommodations will be made for students with disabilities. Please contact Disability Services for more information: email [accessibilitycenter@uwosh.edu](mailto:accessibilitycenter@uwosh.edu), or visit the [Accessibility Center Website](#). Information related to an individual's accommodation request will be kept confidential.

"Students are advised to see the following URL for disclosures about essential consumer protection items required by the Students Right to Know Act of 1990: <https://uwosh.edu/financialaid/consumer-information/>."

**Academic Integrity:**

The Wisconsin Administrative Code states: "Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others academic endeavors." (§ UWS 14.01) Plagiarism and other forms of academic misconduct are serious offenses with severe penalties. See the University of Wisconsin Oshkosh Student Discipline Code for definitions of academic misconduct and details about procedures, sanctions, and other relevant information.

**Attendance:**

Attendance in both lecture and lab sessions is critical to your success in the course. Attendance sheets will be passed around during both sections in order to keep track of who is attending class regularly. ~~Missing more than 8 lectures will result in automatic failure of the class. Missing more than 4 labs will result in automatic failure of the class.~~ Participation points will be awarded by completing tasks “in class”. (Points from previous on-campus activities that were turned in and attendance will be combined with points for any future online activities to determine the final attendance and participation score.)

**Grades:**

Your final grade is based on the following components:

- Four lecture exams @ 100 points each: 400 points towards total course grade
- Ten Lab Quizzes @ 20 points each: 200 points total
- Attendance and Participation: 40 points total
- 2 course assessments @ 5 points each: 10 points total

The total course grade will be assigned according to the following system (based on 650 total course points):

A >= 93%	A- >= 90%	
B+ >= 88%	B >= 83%	B- >= 80%
C+ >= 78%	C >= 73%	C- >= 70%
D+ >= 68%	D >= 63%	D- >= 60%
F < 60%		

Except in cases of emergency, or unless prior arrangements are made with the instructor, assignments and exams are due as indicated on the schedule; late assignments will not be accepted. With prior instructor consent, or in cases of emergency, late assignments/exams or make-ups may be permitted. Depending on the circumstances, a grade reduction MAY result. Please see instructor if you have questions.

**Lecture Exams:**

Four lecture exams will be given during the semester. Each exam will cover only the lecture topics discussed since the previous exam. (No exam will be cumulative in scope.) Each exam will consist of 50 multiple choice questions and will be worth a possible 100 points. Exams will not be curved. You will also complete a pre- and a post-course assessment, each worth 5 points.

**Lab Exercises and Quizzes:**

Twelve lab exercises will be conducted throughout the semester. Each lab ~~will have an associated multiple choice quiz on Canvas~~ will be worth 20 points. Your 10 highest lab scores will count toward your final grade. Lab exercises will be completed during the week, and must be turned in on Canvas any time prior to 11:30pm the following Sunday. Students can take pictures of their labs and send in the pictures, take pictures of the labs and put all of the pictures in one file (Word document or PowerPoint) and turn in the file, or scan their labs in and turn in the scanned documents.

**Class Schedule (extremely tentative):**

<b>Date</b>	<b>Lecture Topic</b>	<b>Readings (Page Numbers)</b>			<b>Lab</b>
		<i>Elemental GeoSys 8</i>	<i>Exploring Physical Geog</i>	<i>Physical Environ</i>	
Feb. 3	Intro to Phys. Geog.	2-18	2-19, 28-29	Chapter 1	<b>No Lab</b>
Feb. 5	Solar Energy and the Seasons	34-38, 42-48	44-55	Chapter 2	
Feb. 7					
Feb. 10	The Atmosphere	48-56	36-37, 56-59	Chapter 3	Lab 1
Feb. 12	Solar Radiation and the Atmosphere	38-42, 71-85	39, 60-67	Chapter 4	
Feb. 14					
Feb. 17	Air Temperature	86-101	40-41, 66-71, 83	Chapter 5	Lab 2
Feb. 19					
<b>Feb. 21</b>	<b>Exam #1</b>				
Feb. 24	Air Pressure and Winds	107-116	74-81, 88-92	Chapter 6	Lab 3
Feb. 26					
Feb. 28	Global Circulation	116-121	86-87, 93-100	Chapter 6	
Mar. 2					
Mar. 4	Upper Air Circulation	119-124	100-101	Chapter 6	
Mar. 6	Wind Systems	124-136	82-85, 102-103, 180-185, 195-207	Chapter 6	Lab 5a
Mar. 9					
Mar. 11	Water in the Atmosphere	143-151, 156-157	42-43, 108-117, 126-129	Chapter 7	
Mar. 13					
Mar. 16	Classes Canceled - Corona Virus Outbreak				
Mar. 18					
Mar. 20					
<b>Spring Break</b>					
Mar. 30	Review/Getting Started Online				Lab 4
<b>Apr. 1</b>	<b>Exam #2</b>				
Apr. 3	Lifting and Adiabatic Processes	151-154, 159-164	118, 122-123	Chapter 7	Lab 5
Apr. 6					
Apr. 8	Atmospheric Stability	151-154	119-121, 140-141	Chapter 7	
Apr. 10					
Apr. 13	Clouds	154-156	124-125	Chapter 7	Lab 6/7a
Apr. 15	Precipitation		130-139	Chapter 7	
Apr. 17	Air Masses	158-159	144-147	Chapter 8	
Apr. 20	Mid-latitude Cyclones	161-168	148-151	Chapter 8	Lab 7a/8
Apr. 22					
<b>Apr. 24</b>	<b>Exam #3</b>				
Apr. 27	Thunderstorms	168-172	154-161, 174-175	Chapter 8	Lab 9/10
Apr. 29	Tornadoes	172-173	162-167	Chapter 8	
May 1					
May 4	Hurricanes	173-180	168-171, 176-177, 239	Chapter 8	Lab 11
May 6					
May 8	Climate	217-243	212-229	Chapter 9	
May 11					
May 13	Climate Change	245-277	234-241	Chapter 9	<b>No Lab</b>
<b>May 15</b>	<b>Exam #4</b>				

### Student Learning Objectives:

Certain learning objectives are key to successful completion of each section of this course. They are as follows:

Unit	Pages	Objective	Supporting Activities
1	2-18, 34-56, 71-101	Meteorology background: Be able to connect the tilt, rotation and position of the earth to the seasons, solar angles and radiation received. Understand the basics governing latitude, longitude, and time. Be able to connect the tilt, rotation and position of the earth to global temperatures. Understand solar radiation and how influential it is to our weather.	Labs 1a, 2, and 3 Test #1
2	107-136, 143-151, 156-157	Main processes governing our weather: Be able to explain atmospheric pressure. Identify exactly how pressures at the surface connect to pressures at upper levels, and how pressure differences cause winds. Be able to reconstruct global pressure and wind patterns. Be able to explain the role water plays in our atmosphere. Understand the impacts of El Niño, La Niña and the NAO on weather in the United States and world-wide.	Labs 4a, 5a and 4 Test #2
3	151-168	Current Weather: Be able to calculate the temperatures of air parcels, and explain how the temperature of a parcel compared to its environment will determine the stability of the atmosphere. Be able to identify the various types of clouds, and all of the different air masses. Relate various types of clouds and precipitation to fronts associated with mid-latitude cyclones, and explain how the weather changes within a typical cyclone.	Labs 5, 6 and 7a Test #3
4	168-180	Severe weather: Understand the processes that govern thunderstorm development and sustenance. Know how, when, and why a tornado or a hurricane forms, and what it takes to keep these major weather events going.	Lab 8 Test #4
	217-277	Long-term weather: Understand the various climates across the globe. Be able to identify each one, and explain why that location has that particular climate. Relate past climate change with what could happen in the future. Understand the connection between humans and climate change.	Labs 9, 10, 11, and 12 Test #4