GEOG 040: WEATHER, CLIMATE and LANDSCAPES, 3 credits **Spring 2021**

Online lecture: Mondays 5:05-6:20pm – material posted on Blackboard
Discussion sections:

A01: Tuesdays 2:50-4:05 – Lafayette 108
A02: Wednesdays 3:30-4:45 – Kalkin 007
A03: Thursdays 2:50-4:05 - Lafayette 108

Course Description and Goals

Weather, Climate and Landscapes introduces dynamics of earth's atmosphere, landscapes and ecosystems. In this course we will explore how the atmosphere works, gain skills for interpreting the weather and understanding controls on climate, and examine how weather and climate influence processes that shape the surface of the earth and the distribution of key ecosystems. We will also seek to understand how these processes affect and are affected by human activity. Because this offering is taking place amidst the global Covid-19 pandemic, when anxiety, stress and illness are impacting how we experience life and our studies, we turn some attention to the beauty of art, exploring how the majesty and power of the weather, our climate and spectacular landscapes are captured by visual artists.

There are no prerequisites for this course. This course fulfills a three-credit natural science distribution requirement in the College of Arts and Sciences. Upon completion of the course, you will be able to

- describe the role of radiation, pressure and atmospheric moisture on the development of weather phenomena in the mid-latitudes;
- display, analyze, and interpret data to explain spatial and temporal patterns associated with key biophysical processes, including condensation and cloud formation, runoff, carbon sequestration and primary production;
- develop conceptual models showing the flow of energy and mass within and between the atmosphere, hydrosphere and biosphere and use these to predict outcomes of natural or human-induced environmental change;
- interpret maps to explain the spatial distribution of world climate zones, landforms, and biomes, and
- contribute or react to a class-wide exchange on artistic representations of weather, climate and landscapes.

Course Format

This class will be offered in "hybrid" format, meaning that some of the course content will be delivered online through Blackboard as recorded lectures, demonstrations and films, while other content is delivered in person in the classroom or outdoors. The online sessions allow you some flexibility in scheduling this work and the opportunity to review content by listening more than once to short lectures and interactive demonstrations or visualizations. Discussion sections will generally involve a short review of content from the online module, followed by activities intended to build understanding of content and develop skills in analysis and interpretation of spatial data and maps.

Weekly online modules will be available no later than Friday at 5:00pm for the following week, and students will be expected to complete the week's module **before** attending that week's face-to-face discussion meeting. It is critical that you complete this online work before attending your in-person discussion section each week in order to be prepared for class activities. In addition to online and in-person class time, students are expected to spend roughly 6 hours per week reviewing course content, reading assigned sections of the textbook, taking weekly quizzes, and completing homework assignments in accordance with accreditation requirements for a 3-credit course. See this page for more information on expectations for a credit hour of earned course work.

Instructors, contact information, and office hours

Instructor:

Dr. Beverley Wemple
Professor of Geography
bwemple@uvm.edu
Office hours: M 4:00-5:00pm, W 2:00-3:00pm

Teaching Assistants: (TA office hours will be posted on Blackboard)

Katie Enns
Kathleen.Enns@uvm.edu
Office hours: M 11:00am-12:30pm

Shayla Triantafillou
Shayla.Triantafillou@uvm.edu
Office hours: Fridays 3:30-5:00pm

How to connect with us during office hours: Each of us will set up a Teams meeting for our office hours. You will find links to these meeting times in the Syllabus & Handouts folder on Blackboard. Use the "Join here" button on that site to join the office hour meeting. Be aware, these are open to any student in the class and we welcome an opportunity to talk with you in small groups. If you need a private meeting with any of us, please email us for times.

Textbook, electronic resources and supplies

Alan Arbogast. 2017. *Discovering Physical Geography*. 4th edition. John Wiley & Sons, Inc. The UVM bookstore has both hard copies and digital e-book access codes. The textbook can also be purchased online via Amazon and other booksellers. If you are able to find a used copy of the 3rd edition at a lower price, it is fine to use this. I will provide a guide for assigned page numbers of the 3rd edition of the text on Blackboard.

The course web page is available through Blackboard at http://bb.uvm.edu. Here you will find the syllabus, links for weekly online modules, copies of homework assignments, additional readings, quizzes, and a grade book to track your performance in class.

I will also provide you with a weekly note-taking guide for each online module. If you have access to a printer, I encourage you to print these and use them to take notes. If not, I encourage you to keep notes from the notetaking guide in a notebook. These will serve as valuable study guides for exams. You should bring a calculator to class weekly for working on in-class exercises. During some weeks in class, you will need a calculator – one that includes trigonometric functions (sine, cosine, tangent).

Email and communications

Email messages regarding the course will be sent regularly to your UVM email account. You should check this mail account regularly for messages regarding class. If you would like to use email to correspond with us, please type **GEOG 040** in the subject line, and ***send all email communication to both the instructor and the TAs*** so that we are all in the communication loop. I will often ask the TAs to respond to messages. If you miss your discussion section due to illness or quarantine restrictions, the best approach would be to attend an office hour with the instructor or a TA as soon as you are able to get a sense of what was covered.

Assessment and Grading

Grading in this course will be based on a set of assignments for which you can earn points, giving you some flexibility in what you opt in/out of. Here are the elements you can participate in to earn points in the course.

- □ **Homework assignments** (15 points each x 12 = 180 points) –Homework assignments will be given each week and will be available on Blackboard. To earn credit, these must be completed by the due date on Monday afternoons (aim for completing these on Sunday!). These will consist of short multiple choice questions, mathematic or data problems, and short narrative answers to questions. Often, we will practice in class the types of problems that appear on these assignments, so coming to your in-person discussion section, participating, and asking clarifying questions will give you a chance to practice before working on a homework assignment.
- □ **Yellowdig posts** (5 points each x 15 = 75 points) – We will use the Yellowdig discussion platform as a way of engaging in a relatively free-form online discussion and sharing of material relevant to the course. You may post a piece of art (use a link or post the art with attribution to the artist; art you create is acceptable), a news story, a question, or reflection that relates to the week's content to earn points. You may also respond to someone else's post. There's no distinction in earned points on Yellowdig – post or respond thoughtfully and you will earn points. The goal here is to engage with each other and bring something back to the group that contributes to our learning.
- □ **Film viewings** (25 points each x 3 = 75 points) – On three weeks during which a Tuesday, Wednesday or Thursday "respite day" is scheduled this semester, films that relate to course content will be posted on Blackboard, along with an assignment to complete. Each student should complete two of these three viewings, with the chance to opt out of class work on your respite day. You may complete an additional viewing to earn extra points on your course grade.
- □ **Exams** (75 points each x 2 = 150 points) – The midterm and final exam are each worth 25% of your course grade. These will be given on Blackboard and must be taken at the date and time scheduled for the course.

This gives a total of **480** possible number of points that can be earned. Letter grades for the course will based on earned points as follows:

- > 360 points: A
- 324-360 points: B
- 292-324 points: C
- 262-292 points: D
- < 262 points: F

Grades will be elevated to a "+" within each letter grade range for exemplary work effort.

Class Policies

Class policies are intended to provide at atmosphere favorable to learning. Adherence to these policies will help keep you current with class material and ensure excellent performance in the class.

- You are expected to review readings before class, attend your weekly discussion section in-person, take notes, and ask questions when material is not clear. If you miss class due to illness or quarantine restrictions, you should attend one of the TA's office hours as soon as possible thereafter to catch up on missed work. You might also want to identify a classmate who can help you catch up on any missed material.
- Due dates for homework exercises will be strictly adhered to. Late homework exercises will not be graded, but you can opt out of some of these if you can't complete them on time and complete other assignments instead.
- Exams may not be rescheduled, except for an illness that can be documented through your Dean's office. Exams will be given online, allowing you to take them even if you are in quarantine.
- Academic integrity is an essential part of learning at UVM. UVM faculty, staff and students expect that students will conduct themselves in an ethical way while at the University and abide by the behavior written in *Our Common Ground*. Offenses against academic integrity are any acts which would have the effect of unfairly promoting or enhancing one's academic standing within the entire community of learners. Such acts are serious offenses, which insult the integrity of the entire academic community of the University. Any suspected violations of the policy will not be tolerated and all allegations will be forwarded to the Center for Student Ethics & Standards. More information on UVM's code of academic integrity is available on the web at http://www.uvm.edu/~uvmppg/ppg/student/acadintegrity.pdf .

A note about laptops and cell phones

When attending class sessions, cell phones should be turned off once class begins. Laptops may be used during class when needed to review a website, demonstration, or notes, but should not be used for recreational web browsing, checking emails, chatting, etc. Students are asked to comply with this policy out of respect for their peers and the instructor. Computer and phone use during class is distracting to your peers. Although electronic note taking is increasingly popular, engaging in the class and taking notes on paper can be a very effective way of ensuring your success in the class while minimizing distractions to yourself and others. There is a growing body of scientific research showing that students who take notes by hand perform better in college courses and those who use laptops during class tend to be more distracted, and distract their peers. Check out these stories to learn more:

https://www.psychologicalscience.org/news/releases/take-notes-by-hand-for-better-long-term-comprehension.html
https://www.nytimes.com/2017/11/22/business/laptops-not-during-lecture-or-meeting.html

Accommodations and Academic Support

If you are in need of academic support, please consider visiting with the instructor to discuss your options. There are a number of resources to help you succeed: The teaching assistants assigned to the

course are an important resource for learning support. TAs hold weekly office hours and are available to assist with homework, review class notes and provide another explanation of lecture material. If you would like to consider arranging for a personal tutor, we have a number of students who may be available to work with you.

Students registered with Student Accessibility Services for ACCESS accommodations should visit with the instructor *during office hours* or send an email request to schedule an appointment so that we can have a discussion about your needs away from the hectic environment of the classroom before and after class meetings.

More information on academic support programs at UVM is available on the web at https://www.uvm.edu/academicsuccess/student_accessibility_services . Students are encouraged to check out these programs including

- the **Learning Co-Op**, which houses the Writing Center and coordinates subject area tutoring and supplemental instruction,
- **ACCESS**, which provides accommodation, consultation, and educational support services to students with learning and physical disabilities, and
- **TRiO**, which provides academic support to first generation college students and those from limited-income families.

How to keep on top of this class and succeed

Succeeding in this class will require putting time into both class session and out of class work. Your effort each week should look something like this:

- Sunday or Monday: Skim through assigned reading on the syllabus for key concepts; pay particular attention to the figures in the assigned reading, spend a little time on these, reading captions and examining the content of the figures.
- Monday: Complete the online module for the week posted on Blackboard. I encourage you to do this during the Monday evening class block, so that you keep a regular schedule of doing this work, but you can complete the online module any time before your discussion section. Use the notetaking guide to take notes and bring those notes to class.
- Tuesday, Wednesday, Thursday: Come to your scheduled Discussion section. Be prepared to participate and ask questions. Class will be more engaging if you participate. Keep any handout or exercise we complete during class to use as an aid to completing the week's homework.
- Friday or Saturday: This is important homework/study time. Carve out a few hours to carefully read over the assigned material from our textbook. This is a chance to reinforce the week's content. Review notes from both the online and discussion session. Complete the homework assignment by Sunday at midnight.
- Any time: Post to Yellowdig with a piece of art, a news story, a question, or a reflection that relates to the week's class content – or respond to someone else's post - to earn points and engage with your classmates.

Following this schedule will put you in the best position to stay current with course material and earn a top grade. Not completing the various work expectations outlined above will likely mean you'll fall behind, and it will show on your grades.

GEOG 040 – Spring 2021. Schedule of topics and assigned readings

Dates	**Topic, Readings** - readings listed are from 4th edition (3rd edition in parentheses)
1. Feb 1-4	Course introduction *Weather, climate, landscapes – science, politics, and art* Read: Ch 1 and Ch 2 (3rd edition: Ch 1 and Ch 2)
2. Feb 8-11	Earth-Sun relations and Radiation physics *Structure and composition of the atmosphere; electromagnetic radiation; the "greenhouse" effect* Read: Ch 3 and Ch 4, pages 51-60 (3rd edition: Ch 3 and Ch 4, pages 58-70)
3. Feb 15-18	Earth's energy balance *Heat transport and the radiation balance; land-water contrasts; temperature variability in space and time; the "urban heat island" effect; feedbacks* Read: Ch 4, pages 60-72 and Ch 5 (3rd edition: Ch 4, pages 70-80 and Ch 5)
4. Feb 22-25	Atmospheric pressure and winds *Temperature-pressure relationships; global circulation of the atmosphere; global wind patterns; the ITCZ and monsoons* Read: Ch 6, pages 90-113 (3rd edition: Ch 6, pages 104-130)
5. Mar 1-4	Ocean circulation *Ocean currents; the El Niño southern oscillation; teleconnections* Read: Ch 6, pages 114-118 (3rd edition: Ch 6, pages 130-135) T, W, R – Respite week film viewing
6. Mar 8-11	Atmospheric moisture *Air temperature-vapor pressure relationship; atmospheric humidity and instability; clouds* Read: Ch 7 (3rd edition: Ch 7)
7. Mar 15-18	Storm systems and weather variability *Air masses, fronts and mid-latitude cyclones; interpretation of synoptic weather maps* Read: Ch 8 (3rd edition: Ch 8)
8. Mar 22-25	Midterm exam, Monday March 22 T, W, R - Respite week film viewing

9. Mar 29 – Apr 1	Climate variability and Earth's climate history *Radiative forcing and the role of atmospheric pollutants; climate reconstructions from instrumental and proxy records* Read: Ch 9, pages 174-176 + 188-196 (3rd edition: Ch 9, pages 200-203 + 217-226)
10. Apr 5-8	Global climate models and climate-biosphere connections *General circulation models and climate projections; net primary production, carbon sequestration and climate regulation* Read: Ch 9, pages 196-203 (3rd edition: Ch 9, pages 226-233) and article posted on Blackboard
11. Apr 12-15	Climate and the biosphere *Köppen climate zones and global biomes; ecological disturbance and succession; vegetation adaptations to climate* Read: Ch 9, pages 176-188 + Ch 10 (3rd edition: Ch 9, pages 203-217 + Ch 10) T, W, R - Respite week film viewing
12. Apr 19-22	How climate, and climate extremes, shape the landscape *Water, ice and the evolution of landscapes; landform mapping and interpretation* Read: Ch 17 (3rd edition: Ch 17)
13. Apr 26-29	Morphology of dynamic landscapes *Changes in the cryosphere; tracking environmental change* Review: Ch 17 (3rd edition: Ch 17)
14. May 3-6	Runoff processes and flood dynamics *Rivers and fluvial landscapes; rainfall-runoff dynamics; estimating flood history and frequency* Read: Ch 16 (3rd edition: Ch 16)
15. May 10 Last class	Course wrap up *No discussion sections this week*