

Microclimatology GEOG 4104A [0.5 credit]

Winter 2020

Seminar: 80 min twice per week

Instructor: Elyn Humphreys, B359 Loeb, elyn.humphreys@carleton.ca

Office hours: I keep an open-door policy but please also feel free to email me to make an appointment.

1. Course description:

Most organisms, including us, live within microclimates. Microclimatology describes the physical environment (light, temperature, humidity, wind speed) formed within a shallow layer near the Earth's surface at a range of scales. Unique microclimates can form within a few millimetres of a leaf surface and can occur within extensive surfaces such as forests. Microclimates can change dramatically from one surface to the next and from one moment to the next as a result of the exchange of energy, water, momentum, and other constituents between the surface and the atmosphere. The interaction between surface physical properties and atmospheric processes is key to successfully understanding ecosystem function at both local and global scales. These principles can be directly applied to a variety of practical applications and topics such as agriculture, forestry, urban planning, and global climate change.

2. Preclusions: none

Prerequisites: GEOG 2013 or permission of the Department

3. Texts & lecture notes:

- 1) Required text: Oke, T.R. 1987. *Boundary Layer Climates*, 2nd Edition. Methuen, London, 435 pp. Copies are available at Haven Books.
- 2) Lecture slides and supplemental readings will be made available through CULearn.

4. Course Calendar:

Lectures may be accompanied by a demonstration or activity, which may be outside. The following schedule may be subject to change.

- Unit 1 *Light and leaves* (Jan 7, 9, 16 – note no class Jan 14)
Readings: pg 3-17, 117-118, 130-134, 366-374, 399, 20-23, 84-87, 143-148
- Unit 2 *Hot Soils* (Jan 21, 23, 28)
Readings: pg 33-37, 42-48, 232-236
- Unit 3 *Microclimates of tiny things* (Jan 30, Feb 4, 6)
Readings: pg 6-8, 23-42, 120-124, 236-240
- *Prep for test (Feb 11), in-class test #1 (Feb 13)*
- No classes during Reading Break (Feb 17-21)
- Unit 4 *Wind & eddies* (Feb 25, 27, Mar 3)
Readings: pg 54-59, 138-139, 167-170, 242-245
- Unit 5 *Evaporation* (Mar 5, 10, 12)
Readings: pg 63-71, 120-127, 158-167, 375-391
- Unit 6 *How do you feel?* (Mar 17, 19)
Readings: pg 190-197, 206-226
- Unit 7 *City Heat* (Mar 24, 26)
Readings: pg 272-303

- *Prep day (Mar 31)/ In-class test #2 (April 2)*

Assignment due dates: #1 – Jan 21; #2 – Feb 11; #3 – Mar 10; #4 – Mar 31

4. Evaluation:

- 40% Take-home assignments (4)
- 10% Quizzes on readings
- 25% In-class test #1 (February 13)
- 25% In-class test #2 (April 2)

Assignments will be based on the lecture material, activities, and demonstrations in class. Collaboration is encouraged while working through the assignments, but each student must hand in their own individually prepared assignment. See statement on plagiarism below. All assignments are due at the beginning of class on the date specified. Late assignments will be deducted 10% if submitted after class but still on the due date or within the next day. Each additional day will be deducted 10% per day including weekends. No assignments will be accepted for grading once graded assignments have been returned. If you are having difficulty meeting the deadlines, speak to the course instructor **in advance** of the due date.

At least 6 short quizzes on readings, each worth 2%, will be given throughout the term. The final quiz mark will be calculated using the top 5 quiz results.

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

6. Statement on Plagiarism:

Plagiarism will not be tolerated. Students should consult the *Academic Integrity Policy* at <https://carleton.ca/secretariat/wp-content/uploads/Academic-Integrity-Policy.pdf>.

Plagiarism: The University Senate defines plagiarism as “*presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one’s own.*” This can include:

- reproducing or paraphrasing portions of someone else’s published or unpublished material, regardless of the source, and presenting these as one’s own without proper citation or reference to the original source;
- submitting a take-home examination, essay, laboratory report or other assignment written, in whole or in part, by someone else;
- using ideas or direct, verbatim quotations, or paraphrased material, concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another’s data or research findings;
- failing to acknowledge sources through the use of proper citations when using another’s works and/or failing to use quotation marks;
- handing in "substantially the same piece of work for academic credit more than once without prior written permission of the course instructor in which the submission occurs."

Plagiarism is a serious offence, which cannot be resolved directly with the course's instructor. The Associate Deans of the Faculty conduct a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They can include a final grade of "F" for the course.

7. Requests for Academic Accommodations:

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details [click here](#).

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details [click here](#).

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

Survivors of Sexual Violence: As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, [click here](#).

Accommodation for Student Activities: Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details [click here](#).