1 Course Details

1.1 Calendar Description
This course examines natural and intentionally-modified microclimates near the earth's surface; energy budgets; transport of mass and heat. Familiarization with some instruments for microclimatic measurements will be required.

Pre-Requisites: ENVS*2030

1.2 Course Description
This course examines natural and intentionally-modified microclimates near the earth's surface; energy budgets; transport of mass and heat. Familiarization with some instruments for microclimatic measurements will be required.

1.3 Timetable
Mon, Wed, Fri
12:30 – 1:20 PM (AD-S, Room Virtual until further notice; face-to-face when allowed in MCKN 228)

1.4 Final Exam
Apr 11 (2:30-4:30 pm). Room TBA.

Exam time and location is subject to change. Please see WebAdvisor for the latest information.

2 Instructional Support

2.1 Instructional Support Team
2.2 Communicating with the Instructional Team

During the course, the instructors will interact with you on various course matters using the following methods of communication:

**Announcements:** The instructors will use Announcements on the course website homepage (on CourseLink) to provide you with course reminders and updates. Please check this section frequently for course updates from your instructors.

**Class time:** With synchronous activities being planned for this course (or face-to-face later in the semester), you will have full access to the instructor for 3 hours of lecture each week. The best time to interact with the instructor is therefore during that time.

**Email:** If you have a conflict that prevents you from completing course requirements, or have a question concerning a personal matter, you can send the appropriate instructor (see applicable weeks below in Sect. 5) a private message by email. The instructor will attempt to respond to your email within 48 hours (weekends and holidays excepted).

**Video Call:** If you have a complex question you would like to discuss with an instructor, you may book a video meeting on Microsoft Teams. Video meetings will depend on the availability of the instructor and will be booked on a first come first served basis. If you require a video meeting, email the instructor.

3 Learning Resources

3.1 Required Resources

**Course Technologies and Technical Support (Software) (Software) System and Software Requirements**

This course will use a variety of technologies including:

1. CourseLink (main classroom)
2. Zoom
3. Teams (via Office 365)

To help ensure you have the best learning experience possible, please review the list of system and software requirements. https://opened.uoguelph.ca/student-
CourseLink System Requirements You are responsible for ensuring that your computer system meets the necessary system requirements. Use the browser check tool to ensure your browser settings are compatible and up to date. (Results will be displayed in a new browser window). [http://spaces.uoguelph.ca/ed/system-requirements/](http://spaces.uoguelph.ca/ed/system-requirements/) [https://courselink.uoguelph.ca/d2l/systemCheck](https://courselink.uoguelph.ca/d2l/systemCheck)

Course Technologies

CourseLink

This course is being offered using CourseLink (powered by D2L’s Brightspace), the University of Guelph’s online learning management system (LMS). By using this service, you agree to comply with the University of Guelph’s Access and Privacy Guidelines. Please visit the D2L website to review the Brightspace privacy statement and Brightspace Learning Environment web accessibility standards. [http://www.uoguelph.ca/web/privacy/](http://www.uoguelph.ca/web/privacy/) [https://www.d2l.com/legal/privacy/](https://www.d2l.com/legal/privacy/) [https://www.d2l.com/accessibility/standards/](https://www.d2l.com/accessibility/standards/)

Technical Support If you need any assistance with the software tools or the CourseLink website, contact CourseLink Support. Email: courselink@uoguelph.ca Tel: 519-824-4120 ext. 56939 Toll-Free (CAN/USA): 1-866-275-1478 Support Hours (Eastern Time): Monday thru Friday: 8:30 am–8:30 pm Saturday: 10:00 am–4:00 pm Sunday: 12:00 pm–6:00 pm

Zoom

This course will use Zoom for lectures and labs. Check your system requirements to ensure you will be able to participate. [https://opened.uoguelph.ca/student-resources/system-and-software-requirements](https://opened.uoguelph.ca/student-resources/system-and-software-requirements) Direct links to the Zoom virtual classroom will be posted on CourseLink (under Content --> Zoom). Recordings of lectures will also be made available on CourseLink.

Teams (via Office 365)

Office 365 Teams is a collaboration service that provides shared conversation spaces to help teams coordinate and communicate information. This course will use Teams for one-on-one meetings with your instructor. It is recommended that you use the desktop version of Teams. As a student you are responsible for learning how to use Teams and its features. For Teams Support visit the CCS website for more information. [https://www.uoguelph.ca/ccs/services/office365/teams](https://www.uoguelph.ca/ccs/services/office365/teams)

Crowdmark

Assignments and exams will be conducted in Crowdmark ([https://crowdmark.com/](https://crowdmark.com/)). You will receive emails with the link to assess the assignments and exams. Answers will be submitted via uploading of images taken of your written work.
Technical Skills

1. As part of your learning experience, you are expected to use a variety of technologies for assignments, lectures, teamwork, and meetings. In order to be successful in this course you will need to have the following technical skills:
   2. Manage files and folders on your computer (e.g., save, name, copy, backup, rename, delete, and check properties);
   3. Install software, security, and virus protection;
   4. Use office applications (e.g., Word, PowerPoint, Excel, or similar) to create documents;
   5. Be comfortable uploading and downloading saved files;
   6. Communicate using email (e.g., create, receive, reply, print, send, download, and open attachments);
   7. Navigate the CourseLink learning environment and use the essential tools, such as Dropbox, Quizzes, Discussions, and Grades (the instructions for this are given in your course);
   8. Access, navigate, and search the Internet using a web browser (e.g., Firefox, Internet Explorer); and
   9. Perform online research using various search engines (e.g., Google) and library databases.

Use online support resources (e.g., Google) if you need support with any of the above.


3.2 Recommended Resources


3.3 Additional Resources

Netiquette expectations (Other)

http://courselink.uoguelph.ca

The course website and Zoom room are considered the classroom. The same protections, expectations, guidelines, and regulations used in face-to-face settings apply to the virtual classroom. Inappropriate behaviour will not be tolerated. Examples of inappropriate online behaviour include:

Posting inflammatory messages about the instructor or fellow students;
Using offensive language;

Copying or presenting someone else’s work as your own;

Buying or selling term papers or assignments;

Posting or selling course materials to course notes websites;

Having someone else complete your quiz or completing a quiz for/with another student;

Stating false claims about lost quiz answers or other assignment submissions;

Threatening or harassing a student or instructor;

Discriminating against fellow students, instructors, and/or TAs;

Using the course website to promote profit-driven products or services;

Attempting to compromise the security or functionality of the learning management system; and

Sharing your username and password

4 Learning Outcomes

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Identify and describe basic principles (e.g., energy budget and Ohm’s law analogy) underlying mass and energy exchange in the environment

2. Apply and interpret these principles to specific microclimates (e.g., non-vegetated, vegetated surfaces)

3. Apply microclimatic principles to broad environmental issues (e.g., climate change)

4. Solve, interpret and communicate results of simple numerical models of microclimates

5. Use simple microclimatic instruments to characterize contrasting microclimates and relate results to microclimatic principles

5 Teaching and Learning Activities

5.1 Lecture
|———|———|
| **Textbook Readings:** | p. 3-6, 8-17; 33-34 |
| Topics: | Radiation, energy and mass balance; consumer vs. supplier and sign convention. |
| **Textbook Readings:** | p. 7, 20-32 |
| **Textbook Readings:** | p. 37-41, 69-71 |
| Topics: | Wind speed profile and aerodynamic resistance; atmospheric surface layer: turbulence and sensible heat, latent heat and momentum flux; stability effects. |
| **Textbook Readings:** | p. 51-76 |
| Topics: | Review for Mid-Term 1. |
| **Textbook Readings:** | Sub-surface climates: heat storage in the soil. Computer model: soil temperature wave |
| Topics: | p. 34-36, 46-48 |
| **Textbook Readings:** | Microclimates of simple non-vegetated surfaces: snow. |
| Topics: | p. 84-98 |
| **Textbook Readings:** | Microclimates of simple non-vegetated surfaces: water. |
| Topics: | p. 98-107 |
| **Textbook Readings:** | Microclimates of vegetated surfaces: crops and forests. Ecosystem-atmosphere carbon exchange. |
| Topics: | p. 110-158 |
| **Textbook Readings:** | Review for Mid-Term 2. |
| Topics: | Climates of Animals. |
| **Textbook Readings:** | p. 190-197, 206-226 |
| Handouts | ———— |
6 Assessments

6.1 Marking Schemes & Distributions

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
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<tr>
<td>Assignment 2</td>
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<td>Midterm Exam 1</td>
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<tr>
<td>Assignment 3</td>
<td>5</td>
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<tr>
<td>Assignment 4</td>
<td>5</td>
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<td>Assignment 5</td>
<td>5</td>
</tr>
<tr>
<td>Midterm Exam 2</td>
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</tr>
<tr>
<td>Final Exam</td>
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<tr>
<td>Microclimate Group Project</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

6.2 Assessment Details

Assignment 1 (5%)
  Date: Fri, Jan 28
  Learning Outcome: 1

Assignment 2 (5%)
  Date: Fri, Feb 4
  Learning Outcome: 1, 2, 4

Midterm Exam 1 (15%)
  Date: Fri, Feb 11
  Learning Outcome: 1, 2

Assignment 3 (5%)
  Date: Fri, Mar 4
  Learning Outcome: 2, 4

Assignment 4 (5%)
  Date: Fri, Mar 11
  Learning Outcome: 1, 2, 3, 4

Assignment 5 (5%)
  Date: Fri, Mar 18
  Learning Outcome: 1, 2, 3, 4

Midterm Exam 2 (15%)
Date: Fri, Mar 25
Learning Outcome: 1, 2, 3, 4

Final Exam (35%)
Date: Mon, Apr 11, 2:30 PM - 4:30 PM
Learning Outcome: 1, 2, 3, 4
Cumulative. Room TBA.

Microclimate Group Project (10%)
Date: See additional notes
Learning Outcome: 5
Please see CourseLink for instructions.

7 Course Statements

7.1 Grading Policies
Assignments are to be submitted following emailed instructions by the stated deadline. No late submissions will be accepted without medical or compassionate documentation.

You should remember that a technical difficulty is not a valid excuse to turn in an assignment late. Don’t wait until the last minute as you may get behind in your work. Be sure to keep a back-up copy of all your assignments: to avoid any last-minute computer problems, save your assignments to a cloud-based file storage (e.g., Google Docs, OneDrive) or send copies to your email account so that should something happen to your computer, your assignment can still be submitted on time or re-submitted.

7.2 Group Work Policy
Discussion of assignments but the work submitted must be your own. Components of the microclimatic measurement project and presentation are to be completed by all group members.

8 University Statements

8.1 Email Communication
As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

8.2 When You Cannot Meet a Course Requirement
When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals
8.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

Graduate Calendar - Registration Changes
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-regchgl.shtml

Associate Diploma Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml

8.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

8.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.
For Guelph students, information can be found on the SAS website
https://www.uoguelph.ca/sas

For Ridgetown students, information can be found on the Ridgetown SAS website
https://www.ridgetownc.com/services/accessibilityservices.cfm

8.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community-faculty, staff, and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University’s policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

Graduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml

8.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

8.8 Resources

The Academic Calendars are the source of information about the University of Guelph’s procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars
https://www.uoguelph.ca/academics/calendars

8.9 Disclaimer
Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (https://news.uoguelph.ca/2019-novel-coronavirus-information/) and circulated by email.

8.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g., final exam or major assignment).

8.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- https://news.uoguelph.ca/return-to-campuses/how-u-of-g-is-preparing-for-your-safe-return/
- https://news.uoguelph.ca/return-to-campuses/spaces/#ClassroomSpaces

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.