



**REVISED COURSE OUTLINE FOR REMOTE LEARNING**

To account for the necessary transition to remote learning from March 13 onward, adjustments have been made to assessment deadlines and requirements so that all coursework tasks are in line with the necessary and evolving health precautions for all involved (students and staff). If you are unable to meet the deadlines or requirements specified, please connect with your course instructor to work out alternative dates/assessments.

1. **Course:** ECOL 419, Terrestrial Communities and Ecosystems - Winter 2020

Lecture 01: MWF 13:00 - 13:50 - Remote Learning (check with your instructor or coordinator for details)

Instructor	Email	Phone	Office	Hours
Dr Peter Dunfield	pdfunfie@ucalgary.ca	220-2469	BI 319D	TBA
Dr. David Layzell	dlayzell@ucalgary.ca	403 220-5161	BI 578	TBA

Lab Technician: Louise Hahn BI 264 220-5280 [lhahn@ucalgary.ca](mailto:lhahn@ucalgary.ca)

LABS	T	09:00; 12:00; 15:00	BI 236
	W	09:00; 14:00	BI 236

**Course Site:**

D2L: ECOL 419 L01-(Winter 2020)-Terrestrial Communities and Ecosystems

**Note:** Students must use their U of C account for all course correspondence.

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

**Prerequisite(s):**

Biology 313 and one of Biology 315 or Environmental Science 401.

See section 3.5.C in the Faculty of Science section of the online Calendar (<http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html>)

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

AMENDED WEIGHTING, POST COVID-19 SHUTDOWN

First Midterm Examination	(Feb 7)	17.5%	In-Class
Second Midterm Examination	(Mar 20)	17.5%	ONLINE D2L QUIZZES, SHORT-ANSWER/MULTIPLE CHOICE
Laboratory Assignments		30%	
Final Examination		35%	ONLINE D2L QUIZ

The FINAL EXAM FORMAT WILL INCLUDE BOTH SHORT-ANSWER AND LONG-ANSWER QUESTIONS. It will be available starting **Thursday April 23 at 1530 MDT** and is **due by 1830 MDT on Friday April 24**.

Students who have completed both midterm exams may choose to not write the final exam, and instead have their final grade prorated based on the midterm exams and laboratory assignments (i.e. the pre-final-exam grade out of 65% will be adjusted to a final grade out of 100%)

Each of the above components will be given a letter grade using the official university grading system (see [section F.1.1](#)). The final grade will be calculated using the grade point equivalents weighted by the percentages given above and then converted to a final letter grade using the official university grade point equivalents.

Letter Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Min. Percent Required	95	88	83	78	74	70	66	62	58	54	50

**4. Missed Components Of Term Work:**

The University has suspended requirements for students to provide evidence for reasons for absences so please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations. Please let your instructor know immediately if you are ill and cannot meet the deadlines specified.

In the event that a student misses the midterm or any course work due to illness, supporting documentation, such as a medical note or a statutory declaration will be required (see Section M.1; for more information regarding the use of statutory declaration/medical notes, see FAQ). Absences must be reported within 48 hours. The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in Section 3.6. It is the student’s responsibility to familiarize themselves with these regulations. See also Section E.3 of the University Calendar.

All absences from lab, or late assignment submission must be approved to waive any penalties. Students missing a lab when data for an assignment is collected require an approval or the assignment may be submitted for feedback only.

**5. Scheduled Out-of-Class Activities:**

There are no scheduled out of class activities for this course.

**6. Course Materials:**

Recommended Textbook(s):

Chapin III FS, Matson PA & Vitousek, PM, *Principles of Terrestrial Ecosystem Ecology 2nd Ed*: Springer.

Text is available free of charge online as an ebook via the Library website.

The Lab Manual will be posted on D2L.

**7. Examination Policy:**

No electronic devices may be used during exams.

Students should also read the Calendar, [Section G](#), on Examinations.

**8. Approved Mandatory And Optional Course Supplemental Fees:**

There are no supplemental, optional or mandatory fees for this course

**9. Writing Across The Curriculum Statement:**

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section [E.2](#) of the University Calendar.

## 10. Human & Living Organism Studies Statements:

See also [Section E.5](#) of the University Calendar.

**STUDIES IN THE BIOLOGICAL SCIENCES INVOLVE THE USE OF LIVING AND DEAD ORGANISMS.** Students taking laboratory and field-based courses in these disciplines can expect involvement with and experimentation on such materials. Students perform dissections on dead or preserved organisms in some courses. In particular courses, students experiment on living organisms, their tissues, cells, or molecules. Sometimes field work requires students to collect a variety of living materials by many methods, including humane trapping.

All work on humans and other animals conforms to the Helsinki Declaration and to the regulations of the Canadian Council on Animal Care. The Department strives for the highest ethical standards consistent with stewardship of the environment for organisms whose use is not governed by statutory authority. Individuals contemplating taking courses or majoring in one of the fields of study offered by the Department of Biological Sciences should ensure that they have fully considered these issues before enrolling. Students are advised to discuss any concern they might have with the Undergraduate Program Director of the Department.

Students are expected to be familiar with [Section SC.4.1](#) of the University Calendar.

## 11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar
- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

## 12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see [www.ucalgary.ca/wellnesscentre](http://www.ucalgary.ca/wellnesscentre) or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The University of Calgary is committed to fostering a safe, productive learning environment. The Sexual Violence Policy (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>) is a fundamental element in creating and sustaining a safer campus environment for all community members. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email ([svsa@ucalgary.ca](mailto:svsa@ucalgary.ca)) or phone at [403-220-2208](tel:403-220-2208).
- d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples.**

- e. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- f. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).
- Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head, Undergraduate of the Department of Biological Sciences, Heather Addy by email [addy@ucalgary.ca](mailto:addy@ucalgary.ca) or phone 403 220-6979. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See [Section E.4](#) of the University Calendar.
- g. **Safewalk:** Campus Security will escort individuals day or night (See the [Campus Safewalk](#) website). Call [403-220-5333](tel:403-220-5333) for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- h. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.
- i. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca). SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca). [Student Ombudsman](#), Email: [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca).
- j. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.
- k. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- l. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

## Ecology 419 - UPDATED TENTATIVE COURSE OUTLINE FROM MARCH 16

Jan 13, 1 L Dunfield, Layzell Course outline / Introduction

Jan 15 - 20, 3 L Layzell, Energy systems and the global carbon cycle

Jan 22 - 27, 3 L Layzell, Photosynthesis / Effects of elevated CO<sub>2</sub> on ecosystems Jan 29 - 31, 2 L Layzell, Roots and the cost of N assimilation

Feb 3 - 5, 2 L Layzell, Nitrogen fixation

### Feb 7 Layzell Midterm 1

Feb 10 - 14, 3 L Dunfield, Soil Chemistry

## **Feb 16 - 22 Winter Break, no classes**

Feb 24 - 26, 2 L Dunfield, Soil Classification

Feb 28, 1 L Dunfield, Soil organic matter

March 2, 1 L Dunfield, Productivity

Mar 4 - 6, 2 L Dunfield, Soil water

Mar 9, 1 L Dunfield, Soil redox

March 11, 1 L Dunfield, The methane cycle / Mitigating methane emissions

## **March 13 Dunfield Midterm 2 CANCELLED**

Mar 16 CLASS CANCELLED

Mar 18 Dunfield, The PETM, posted as narrated PowerPoint to D2L

### **Mar 20 Dunfield - Midterm 2 on D2L**

Mar 23 Dunfield, Leaves/Biofuels, posted as narrated PowerPoint to D2L

Mar 25 Dunfield, Plant-Soil-Microbe interactions posted as narrated PowerPoint to D2L

Mar 27 Jan Ciborowski, Guest Lecture, Format TBA

Mar 30 Layzell, Biological solutions to climate change, Zoom-meeting based class

Apr 1 Layzell, Biological solutions to climate change, Zoom-meeting based class

Apr 3 Layzell, Energy & C flows in Canada's Agrifood System, Zoom-meeting based class

Apr 6 Caren Dymond, BC Forestry, Guest Lecture, Format TBA

## **April 8 Layzell, The role of biobased systems in the commitment to a net-zero Canada, Zoom-meeting based class**

## **April 10 Good Friday, no classes**

## **Apr 13 Easter Monday, no classes**

April 15, 1 L Dunfield/Layzell, Review, Q and A- Zoom Meeting format

### **Ecology 419 - Tentative Laboratory Schedule W20. March 2020 revisions: please refer to D2L information for revisions to lab schedule and grades**

Week 1 (Jan 14, 15) Introduction to communities and ecosystems, soils, and scientific writing

Week 2 (Jan 21, 22) Soil texture, moisture and organic content

Week 3 (Jan 28, 29) Root and plant biomass, soil bacteria and fungi

Week 4 (Feb 4, 5) Soil and forest invertebrates

Week 5 (Feb 11, 12) Soil and forest invertebrates

Week 6 (Feb 18, 19) WINTER BREAK: NO LABS

Week 7 (Feb 25, 26) Soil nutrients and pH

Week 8 (Mar 3, 4) Data Analysis, soil nitrifying potential (set-up)

Week 9 (Mar 10, 11) Soil respiration (set-up)

Week 10 (Mar 17, 18) Soil respiration (finish) and nitrifying potential (finish)

Week 11 (Mar 24, 25) Poster presentation workshop

Week 12 (Mar 31, Apr 1) Open lab: poster assembly

Week 13 (Apr 7, 8) Term project due, project presentations

Participation: Value = 3% All lab activities will be completed in informal teams. This portion of your lab grade is to ensure that all students contribute equally to their team's work. Students are expected to be appropriately

prepared for labs, and to participate fully in all labs.

**Course Outcomes:**

- Quantitatively compare the annual flows of energy and carbon through biological systems with the energy and carbon flows that provide humans with fuels and electricity
- Describe the opportunities for using biological systems to mitigate climate change by reducing CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions and by enhancing carbon sinks
- Describe the drivers of primary productivity and the potential for positive feedbacks among them
- Predict key characteristics of plant and microbial communities based on environmental factors such as temperature, rainfall, and nutrient availability
- Describe the biotic and abiotic processes that control nutrient and carbon cycling through soil, water, air, and biomass
- Explain the relationships between diversity and productivity
- Describe the current knowledge of climate change impacts on terrestrial systems, and suggest strategies to mitigate or minimize these impacts
- Describe the policy instruments that could be deployed to facilitate the use of biological systems in the mitigation of climate change in Canada and globally
- Employ common techniques for quantifying various physical characteristics (e.g. moisture, texture, composition), chemical characteristics (e.g. organic carbon and organic matter content, micro- and macronutrients, pH), biological characteristics (e.g. bacteria, fungi, invertebrates), and ecosystem processes (e.g. nitrifying potential, soil respiration) in soils
- Develop a unique hypothesis to test predictions of soil responses to disturbance, using data analysis and literature review, and present the results as a scientific conference-style poster

Electronically Approved - Mar 24 2020 13:53

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**Department Approval**

Electronically Approved - Mar 24 2020 14:07

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**Associate Dean's Approval for alternate final examination arrangements or remote learning**