

**Faculty of Science Course Syllabus
Department of Biology**

**Environmental Ecology (BIOL 3060)
Winter 2026**

Instructor: Rajesh Rajaselvam Email: Rajesh.Rajaselvam@Dal.Ca Office: LSC 7130
Office Hours: Monday/Wednesday 14:30 - 15:30 hrs, Thursdays by appointment only

Lectures: Tuesday & Thursday 13:05 – 14:25 hrs (Studley/ LSC C 238)

Tutorials: 8 tutorial sessions (80 min/ tutorial)
Tuesday 14:35 - 15:55 hrs (LSC 202, LSC 214 & Killam 2622)

****Delivery of lectures & tutorials: In-person (It is very important that you attend lectures and tutorials).***

Course Description

This course highlights the ecological effects of pollution, disturbance, and other stressors, both anthropogenic and natural. Major subject areas are air pollutants, toxic metals, acidification, eutrophication, oil spills, pesticides, forestry, warfare, urban ecology, risks to biodiversity, and resource degradation. The overarching context of the course is ecological sustainability of the human economy.

Course Prerequisites

BIOL 2060.03 or BIOA 3001.03 or instructor's permission.

Course Textbook

Withgott J, Laposata M, Murck B. 2017. Environment: the science behind the stories. 3rd Canadian edition. Pearson education, Canada.

In addition, credible current publications will be utilized in the lectures.

Learning Objectives

- Explain the importance of natural resources and ecosystem services.
- Identify major pressures on the global environment.
- Identify and describe the forms of energy and major sources of renewable energy.
- Understand water, carbon, nitrogen, and phosphorus cycle and explain how human activities affect these cycles.
- Discuss the concept of sustainability and describe sustainable solutions.
- Understand Earth's atmosphere and assess strategies for control of outdoor air pollution.
- Outline current and expected future trends and impacts of climate change.
- Demonstrate a basic knowledge of human population issues.
- Understand environmental impacts of agriculture and forestry.
- Outline the scale of deforestation and aspects of forest management.
- Demonstrate basic environmental ethics.

- Understand key toxins and pollution (toxic and greenhouse gases, metals, nutrients, petroleum, pesticides).
- Identify the challenges and discuss the current efforts in conserving biodiversity.
- Demonstrate a deeper knowledge of a chosen topic through a formal group presentation.
- Write lab reports based on data analysis and interpretation, and short assignments on tutorial topics.

Course Assessment

Assignment, Exam, or Presentation	Marks %	Date
Quiz 1	08	Feb 05
Mid-Term Exam	24	Feb 26
Oral Presentation (group presentation)	10	Mar 24, 26, 31 & Apr 02
Quiz 2	08	Mar 12
Lab/Seminar Reports	20	TBA/See Brightspace
Final Exam	30	Scheduled by Registrar
Total	100	

Oral Presentation

Students are expected to do a 10-minute power point presentation (Group) on one of the given current environmental issues. Topics are explained in the class.

Grading Scale

Conversion of numerical grades to Final Letter Grades follows the [Dalhousie Common Grade Scale](#)

A+ (90-100)	B+ (77-79)	C+ (65-69)	D	(50-54)
A (85-89)	B (73-76)	C (60-64)	F	(<50)
A- (80-84)	B- (70-72)	C- (55-59)		

Course Policies

General Policies:

Class participation is considered vital.

Pre-tutorial, tutorial, and seminar sessions are compulsory. Complete attendance of all lectures is highly recommended since it helps to improve your grade significantly. Two-week period is given for tutorial submission.

Meeting deadlines is mandatory. No late submission without a valid reason is accepted for marking.

Brightspace (course web-tool) is used for regular updates and announcements. TAs are the first point of contact (unless for major issues). Copying the instructor on messages is highly recommended.

Specific Policies:

The policies will only be implemented when a student's absence is due to physical or mental health conditions; involvement in an accident; immediate family illness, injury, or death; or other extenuating circumstances as described in Dalhousie University's Academic Calendar Regulation: Missed or Late Academic Requirements due to Student Absence (SDA)⁽¹⁾. The student must notify the instructor or teaching assistant *prior* to the academic requirement deadline and must submit a completed Student Declaration of Absence form⁽²⁾. No more than **two (2)** separate Student Declaration of Absence (SDA) forms may be used per course during a single term. SDA forms are valid **only** for tutorials, mandatory lectures/presentations & quizzes (not for exams, and submission deadlines).

Quizzes

- If quiz #1 is missed for a valid and credible reason, those marks will be re-distributed to quiz #2
- If quiz #2 is missed for a valid and credible reason, those marks will be re-distributed to the final exam
- If both quizzes are missed, only one will be re-distributed

Midterm Exam and Final Exam

- One makeup exam can be scheduled for any student(s) provided the examination was missed for a valid and credible reason (document/s may be required), the instructor or teaching assistant was notified prior to the examination start time.
- The makeup exam will be a different exam than the one given during the regularly scheduled examination time.
- If the missed exam is a final examination in the Fall term, the makeup exam will be scheduled for January of the following year.

Tutorials

- Missing a tutorial is only acceptable in those cases where the student has notified the teaching assistant prior to the start time of the tutorial with a valid and credible reason.

* Altogether, **no more than three (3)** tutorials, quizzes, and exams may be missed as there will not be enough material to adequately evaluate the student on.

⁽¹⁾Academic Calendar Regulation: Missed or Late Academic Requirements due to Student Absence:

[https://cdn.dal.ca/content/dam/dalhousie/pdf/dept/university_secretariat/policy-repository/Student%20Absence%20Regulation%20\(May%202018\)%20\(3\).pdf](https://cdn.dal.ca/content/dam/dalhousie/pdf/dept/university_secretariat/policy-repository/Student%20Absence%20Regulation%20(May%202018)%20(3).pdf)

⁽²⁾Student Declaration of Absence Form:

<https://cdn.dal.ca/content/dam/dalhousie/pdf/campuslife/Health%20and%20wellness/FINAL%20Student%20Declaration%20of%20Absence%20Form.pdf>

Course Content

Schedule (Tentative)

A. Lectures

Week 1

Jan 08 - Course Introduction

Week 2

Jan 13 - Introduction to Environment and Sustainability (Chap1)

Jan 15 - Energy, Ecosystems and Cycles of Nutrients (Chap 2 & 3)

Week 3

Jan 20 - Soil Resources (Based on Chap 7)/ **Paper Critique: Pre-tutorial session, Mandatory**

Jan 22 - Biomes and Eco-zones (Chap 5)

Week 4

Jan 27 - Air Pollution & Climate Change Part I (Chap 13 & 14)

Jan 29 - Air Pollution & Climate Change Part II (Chap 13 & 14)

Week 5

Feb 03 - The Climate Change: Poster Session/ **Pre-tutorial session, Mandatory**

Feb 05 - Quiz 1 ...8 Marks

Week 6

Feb 10 - Serengeti National Park/ Movie **Pre-tutorial session, Mandatory (Report required)**

Feb 12 - Global/Canadian Populations (**Followed by a discussion session by TAs**) (Chap 6)

Week 7

Feb 16 - 20 Winter Study break

Week 8

Feb 24 - Focus on Current Environmental Issues & Midterm Review

Feb 26 - Midterm Exam (13:05 – 14:25 hrs @ Studley LSC C 236)...24 Marks

Week 9

Mar 03 - Forestry and Conservation (Chap 10)

Mar 05 - Agriculture and Environment (Chap 8)

Week 10

Mar 10 - Trees and Environment, **Introduction to Students' Oral Presentations**

Mar 12 - Quiz 02 8 Marks

Week 11

Mar 17 - Managing our Waste/ **Discussion session** (Based on Chap 18)

Mar 19 - Strategies for Sustainability (Chap 22)

Week 12 & 13

Mar 24, 26, 31 & April 02 - Students' Presentations 10 Marks

*** Mar 24th and 31st (both lecture and tutorial time will be utilized)**

Apr 07 - Solutions for Biodiversity Crisis (Based on Chap 9) & Final revision

Final Exam (Scheduled by the registrar's office) ...30 marks

B. Seminar/Tutorial sessions

Attendance Mandatory, (4 x 5) = 20 marks

Jan 20: Tutorial 1A: Paper Critique Part 1

Jan 27: Tutorial 1B: Paper Critique Part 2 (**One Report required for Part I and II**)

Feb 03: Tutorial 2: Climate change: Poster Session (**Report required**)

Feb 10: Tutorial 3: Serengeti National Park/ Movie (**Report required**)

Mar 03: Tutorial 4: Pesticides (**Report required**)

Mar 10: Tutorial 5A: Topic/Discussion on oral presentation (group activity)

Mar 17: Tutorial 5B: Oral presentation/PPT preparation (**Mar 23: Final submission/PPT**)

Mar 24, 26, 31 & April 02 - Students' Presentations

** Two weeks will be given to complete and submit the assignments/reports. Meeting the submission deadline is crucial. Please note that lectures and tutorials are subject to change due to administrative decisions and weather-related disruptions.*

University Policies and Statements

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel, and support. Visit or e-mail the Indigenous Student Centre at 1321 Edward St or elders@dal.ca. Additional information regarding Mi'kmaq and Indigenous Relations (including the Elders in Residence program, Land Acknowledgements, Understanding Our Roots, and much more) can be found at: <https://www.dal.ca/about/mission-vision-values/mikmaq-indigenous-relations.html>

Internationalization

At Dalhousie, 'thinking and acting globally' enhances the quality and impact of education, supporting learning that is "interdisciplinary, cross-cultural, global in reach, and orientated toward solving problems that extend across national borders." Additional internationalization information can be found at: <https://www.dal.ca/about/mission-vision-values/global-relations.html>

Academic Integrity

At Dalhousie University, we are guided in all our work by the values of academic integrity: honesty, trust, fairness, responsibility, and respect. As a student, you are required to demonstrate these values in all the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity. Additional academic integrity information can be found at: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Student Accessibility Centre is Dalhousie's centre of expertise for matters related to student accessibility and accommodation. If there are aspects of the design, instruction, and/or experiences within this course (online or in-person) that result in barriers to your inclusion, please contact the Student Accessibility Centre (https://www.dal.ca/campus_life/academic-support/accessibility.html) for all courses offered by Dalhousie with the exception of Truro. For courses offered by the Faculty of Agriculture, please contact the Student Success Centre in Truro (https://www.dal.ca/campus_life/ssc.html).

Conduct in the Classroom – Culture of Respect

Substantial and constructive dialogue on challenging issues is an important part of academic inquiry and exchange. It requires willingness to listen and tolerance of opposing points of view. Consideration of

individual differences and alternative viewpoints is required of all class members, towards each other, towards instructors, and towards guest speakers. While expressions of differing perspectives are welcome and encouraged, the words and language used should remain within acceptable bounds of civility and respect.

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness (Strategic Priority 5.2). Additional diversity and inclusion information can be found at:

<https://www.dal.ca/about/mission-vision-values/equity-diversity-inclusion-and-accessibility/about-office-equity-inclusion.html>

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner - perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution. The full Code of Student Conduct can be found at: <https://www.dal.ca/content/dam/www/about/leadership-and-governance/governing-bodies/code-student-conduct.pdf>

Fair Dealing Policy

The Dalhousie University Fair Dealing Policy provides guidance for the limited use of copyright protected material without the risk of infringement and without having to seek the permission of copyright owners. It is intended to provide a balance between the rights of creators and the rights of users at Dalhousie. Additional information regarding the Fair Dealing Policy can be found at:

<https://www.dal.ca/content/dam/www/about/leadership-and-governance/university-policies/fair-dealing-policy.pdf>

Student Use of Course Materials

Course materials are designed for use as part of this course at Dalhousie University and are the property of the instructor unless otherwise stated. Third party copyrighted materials (such as books, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law. Copying this course material for distribution (e.g. uploading to a commercial third-party website) may lead to a violation of Copyright law.

Student Resources and Support

University Policies and Programs

Important Dates in the Academic Year (including add/drop dates):

http://www.dal.ca/academics/important_dates.html

Classroom Recording Protocol: <https://www.dal.ca/content/dam/www/about/leadership-and-governance/university-policies/class-recording-protocol.pdf>

Dalhousie Grading Practices Policies: <https://www.dal.ca/content/dam/www/about/leadership-and-governance/university-policies/grading-practices-policy.pdf>

Grade Appeal Process: https://www.dal.ca/campus_life/academic-support/grades-and-student-records/appealing-a-grade.html

Sexualized Violence Policy: <https://www.dal.ca/content/dam/www/about/leadership-and-governance/university-policies/sexualized-violence-policy.pdf>

Scent-Free Program: <https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>

Learning and Support Resources

General Academic Support – Advising (Halifax): https://www.dal.ca/campus_life/academic-support/advising.html

General Academic Support – Advising (Truro): https://www.dal.ca/campus_life/ssc.html

Student Health & Wellness Centre: https://www.dal.ca/campus_life/health-and-wellness.html

On Track (helps you transition into university, and supports you through your first year at Dalhousie and beyond): https://www.dal.ca/campus_life/academic-support/On-track.html

Indigenous Student Centre: https://www.dal.ca/campus_life/communities/indigenous.html

Mi'kmaq and Indigenous Relations: <https://www.dal.ca/about/mission-vision-values/mikmaq-indigenous-relations.html>

Elders-in-Residence (The Elders in Residence program provides students with access to First Nations elders for guidance, counsel, and support. Visit the office in the Indigenous Student Centre or contact the program at elders@dal.ca or 902-494-6803: <https://www.dal.ca/about/mission-vision-values/mikmaq-indigenous-relations/elders-in-residence-and-traditional-knowledge-keepers.html>

Black Student Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html



International Centre: https://www.dal.ca/campus_life/international-centre.html

LGBTQ2SIA+ Collaborative: <https://www.dal.ca/about/mission-vision-values/equity-diversity-inclusion-and-accessibility/about-office-equity-inclusion/community-specific-groups/lgbtq2sia-collaborative.html>

Dalhousie Libraries: <http://libraries.dal.ca/>

Copyright Office: <https://libraries.dal.ca/services/copyright-office.html>

Dalhousie Student Advocacy Services: <https://www.dsu.ca/dsas?rq=student%20advocacy>

Dalhousie Ombudsperson: https://www.dal.ca/campus_life/safety-respect/ombudsperson.html

Human Rights and Equity Services: <https://www.dal.ca/about/mission-vision-values/equity-diversity-inclusion-and-accessibility/about-office-equity-inclusion/human-rights-and-equity-services.html>

Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html

Study Skills/Tutoring: http://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

Faculty of Science Advising Support: <https://www.dal.ca/faculty/science/current-students/undergrad-students/degree-planning.html>

Safety

Biosafety: <http://www.dal.ca/dept/safety/programs-services/biosafety.html>

Chemical Safety: <https://www.dal.ca/dept/safety/programs-services/chemical-safety.html>

Radiation Safety: <http://www.dal.ca/dept/safety/programs-services/radiation-safety.html>

Laser Safety: <https://www.dal.ca/dept/safety/programs-services/radiation-safety/laser-safety.html>

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