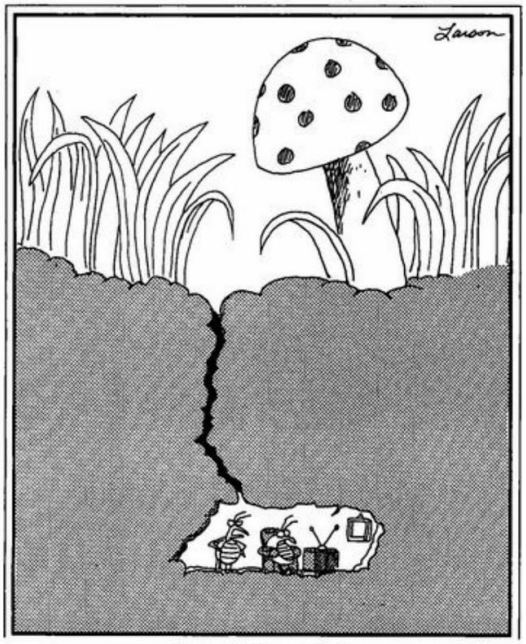
ENVR 1000 ***Environmental Science 1 – Concepts***

Winter 2026

Department of Environment and Geography
Clayton H. Riddell Faculty of Environment, Earth, and Resources
University of Manitoba

Course Details

Section:	A01
Credit hours:	3
Class times:	MWF 11:30 am – 12:20 pm
Location:	Wallace 221



"You call this a niche?"

Gary Larson, *The Far Side* (1986)

Instructor Information

Instructor name:	Dr. Brock Edwards
Preferred form of address:	Brock
Office location:	Wallace 252
Office hours:	Mondays and Wednesdays, 12:30 – 2:30 pm
Email:	brock.edwards@umanitoba.ca Emails will be answered within 24 hours, Monday to Friday—but I sometimes check emails on weekends. I look forward to meeting every student! Some correspondence will require documentation and therefore is best done by email (such as requesting special permission).

About the Course

This course will introduce students to the conceptual framework of the environment by examining its physical, biological, and social components. General topics to be considered will include ecological principles and the responses of natural and managed systems to disturbance; population growth; biodiversity and conservation; and environmental sustainability.

Course Learning Outcomes

By the end of the course, students will understand the principles of ecosystem structure and function and the natural ecological services that purify, moderate and generate resources we rely heavily on to sustain life and human well-being. Students will consider the natural and human-induced responses to disturbances found in, for example, aquatic systems such as wetlands and lakes; terrestrial systems involving soils and minerals, grasslands and forests; and the atmosphere, including climate change and its impacts. Strategies that promote sustainable management of natural resources are introduced. Canadian examples (often from Manitoba) are used throughout the course as case studies illustrating the environmental challenges we face and solutions that can be applied.

Course Materials

Lecture Slides: PowerPoint lecture slides will be posted to UM Learn before each class.

Textbook: The optional textbook for this course is: *Visualizing the Environment: Canadian Edition*, Berg, Hagar, Goodman, Baydack (eds.), 2010, John Wiley & Sons.

To purchase the e-textbook from the bookstore, go to:
https://www.campusebookstore.com/link/?id=dd1a718c-5993-4c12-9143-8fd7a5e26816.

Note: There are a number of textbooks on this topic that are available. You can use other environmental science textbooks to find information on concepts and ideas described in this course.

Additional Resources: These will be posted to UM Learn and provide extra information that can be useful to your independent studies and research. Resources will include web links to key agencies such as Environment and Climate Change Canada and the International Union for the Conservation of Nature, and a number of links to videos.

Student Guidelines

Attending class: I strongly recommend you attend class and ask questions. I encourage dialogue within the classroom, but ask that you always remain respectful. While I do post the lecture slides before each class on UM Learn, **it is in your best interest to attend class**. You will get the most out of this course if you make efforts to attend class, engage with the material, ask questions and participate in discussions and exercises.

Communication: General course communications outside of the classroom will be sent by email. The University requires all students to activate an official University email account. You are required to obtain and use your U of M email account for all communication between yourself and the university (http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html).
Please note that all communication between myself and you as a student must comply with the electronic communication with student policy. Full details of the Electronic Communication with Students are accessible at: https://umanitoba.ca/governance/sites/governance/files/2021-06/Electronic%20Communication%20with%20Students%20Policy%20-%202013_09_01%20RF.pdf.

Online learning: Please make sure you have working access to your student UM Zoom account by visiting https://umanitoba.ca/about-um/tools-working-remotely/zoom. While this is an in-person course, there may be unforeseen circumstances that require a lecture to be held over Zoom, either synchronous (i.e., during scheduled class time) or pre-recorded for later viewing.

Voluntary withdrawal: The voluntary withdrawal (VW) deadline for this course is **March 19, 2026**.

Academic integrity: It is the responsibility of the student to know the university's policies and regulations concerning academic integrity and plagiarism. Please refer to "Schedule A" policies and resources for students as posted on UM Learn. In addition, please note that:

(i) group projects are subject to the rules of academic dishonesty;
(ii) group members must ensure that a group project adheres to the principles of academic integrity;
(iii) if a group member is not acting with academic integrity or not performing their duties as agreed, please advise the Instructor as soon as possible to resolve any potential problems as early as possible;
(iv) collaboration between students is encouraged for understanding material, proof-reading a peer's work, making suggestions on approach, etc.; however,
(v) all work is to be completed independently unless otherwise specified.

Further information on the University's policy on academic integrity and artificial intelligence is available at: umanitoba.ca/student-supports/academic-supports/academic-integrity.

Course Delivery and Evaluation

Course format: The format of the course delivery includes in-person lectures; two tests (delivered in class), and a final examination scheduled by the University Registrar. There may be instances where you will be assigned tasks outside of the lecture to investigate topics, view assigned videos and/or examine case studies related to the course content.

Tests and Exams: The tests are based a mix of multiple choice, true/false and short answer questions. They are delivered at the start of the lecture period. There are no lectures on test days. Test results will be posted under the "Assignments" tab on UM Learn 1–2 weeks after the test is written.

The final examination is scheduled by the Registrar during the Winter examination period. See https://umanitoba.ca/registrar/final-exams where exam details are posted. Final exam results will not be posted to UM Learn; your score will be reflected in the the final grade appearing on your transcript on Aurora.

Each test is closed book and is *not* cumulative, and is worth 25% toward your final grade in the course. Details on testable material for each test will be provided in class. The final examination *is* cumulative covering ALL topics in the course, and is worth 50% of the final grade.

Test dates:

- **Test 1** (worth 25%): **Monday, February 9** – IN CLASS – covers topics from Units 1, 2, and 3
- **Test 2** (worth 25%): **Wednesday, March 11** – IN CLASS – covers topics from Units 4 and 5
- **Final Examination** (worth 50%): scheduled by the Registrar – cumulative (covering *all* course topics); there will be a greater emphasis on topics not covered in Tests 1 or 2 (Units 1–5).

IF YOU MISS A TEST OR THE FINAL EXAMINATION:

Students who are unable to meet a course requirement due to medical circumstances are required to:

- Contact your instructor if it pertains to a missed test;
- Contact a student advisor for a missed final exam (scheduled in the final examination period);

YOU MUST:

- Email your instructor/advisor as soon as possible **AND WITHIN 48 HOURS**; and
- Provide documentation that supports your request (medical, compassionate grounds, etc.)

Grading Scheme:

Letter grade	Grade point value	Percentage	Description
A+	4.5	90–100	Exceptional
A	4.0	80–89	Excellent
B+	3.5	75–79	Very Good
B	3.0	70–74	Good
C+	2.5	65–69	Satisfactory
C	2.0	60–64	Adequate
D	1.0	50–59	Marginal
F	0	0–49	Failure

Lecture Topics

The schedule of units for this course is subject to change at the instructor's discretion, as per Section 2.8 of the Responsibilities of Academic Staff with Regard to Students (ROASS) Procedure. Test dates will *not* change. Week 1 is technically January 5–9; our first class will be Wednesday, January 7. Chapters refer to the optional textbook for this course (*Visualizing the Environment, Canadian Ed.).*

UNIT 1: Introduction (Chapter 1 pp. 4–20, 25–33)
Plan to work through Unit 1 in weeks 1 and 2

1.1 Definitions of Environment and Environmental Sciences
1.2 Non-renewable, Renewable and Perpetual Resources
1.3 Ecological Footprint
1.4 Sustainable Development
1.5 Principles of Scientific Investigation and Scientific Methodology

UNIT 2: Structure and Function of Ecosystems (Ch. 5 pp. 126–153, 159–161)
Plan to work through Unit 2 in weeks 2 and 3

2.1 The Ecosystem Concept and Ecological Levels of Organization
2.2 Systems Theory and Feedback
2.3 Energy Flow and Food Webs
2.4 Biogeochemical Cycles for Carbon, Nitrogen, and Phosphorus

UNIT 3: Species and Community Dynamics (Ch. 3 pp. 66–73; Ch. 5 pp. 153–156; Ch. 7 pp. 200–216)

Plan to work through Unit 3 during week 4

3.1 Biodiversity Principles – Species Richness, Evenness, Dominance, and Spatial Patterns
3.2 Ecological Niche and Resource Partitioning
3.3 Biodiversity and Biological Interactions – Competition, Symbiosis, Predation
3.4 Keystone Species and Ecosystem Health *(Wolves in Yellowstone National Park)*
3.5 Population Dynamics – Exponential and Logistic Growth Patterns

*** TEST 1 – Monday, February 9** (worth 25%) – covers topics from Units 1, 2, and 3 *****

UNIT 4: Atmosphere and Climate Change (Chapter 10 pp. 340–348, 368–382)
Plan to work through Unit 4 during weeks 5 and 6

4.1 General Features of the Atmosphere
4.2 Global Climate System and Earth's Energy Budget
4.3 Anthropogenic Effects – Case Study in Arctic Amplification

Winter Term Break – February 16–20 ***NO CLASSES***

UNIT 5: Forestry and Conservation of Biodiversity (Ch. 7 pp. 215–231; Ch. 8 pp. 248–257, 267–271)
Plan to work through Unit 5 during weeks 8 and 9

5.1 Sustainable Forestry Management
5.2 Parks and Protected Areas – Minimum Viable Population Size; Ecological Integrity; Ecological Islands; Conservation Corridors; Biosphere Reserves
5.3 Conserving Species at Risk *(Mountain Gorillas in Uganda)*
5.4 Managing Invasive Species *(Zebra Mussels in Lake Winnipeg)*

*** TEST 2 – Wednesday, March 11** (worth 25%) – covers topics from Units 4 and 5 *****

UNIT 6: Soil Resources and Agriculture (Ch. 8 pp. 236–247, 263–280)
Plan to work through Unit 6 during weeks 10 and 11

6.1 Types of Agricultural Approaches
6.2 Soil Features and Conservation
6.3 Environmental Impacts of Agriculture
6.4 Integrated Pest Management
6.5 Sustainable Agriculture Management

UNIT 7: Aquatic Resources (Ch. 9 pp. 141–142, 286–320, 334–336)
Plan to work through Unit 7 during weeks 12 and 13

7.1 Properties and Movement of Water – Surface and Groundwater
7.2 Water Quantity – Demands and Solutions
7.3 Sources of Water Pollution and Management Strategies
7.4 Water Quality Challenges in Lake Winnipeg

UNIT 8: Ecotoxicology (Ch. 4 pp. 100–106, 110–122)
Plan to work through Unit 8 during weeks 13 and 14

8.1 Introduction to Environmental Hazards and Toxicants
8.2 Types, Movement, and Fate of Toxic Chemicals in the Environment
8.3 Case Studies – Persistent Organic Pollutants (DDT) and Mercury
8.4 Management of Toxicants: Risk Assessment and Dose Response Studies

The Final Examination (worth 50%) is scheduled by the Registrar during the Winter Term examination period; the exam will be and is *cumulative,* covering all course topics, with a greater emphasis on topics not covered by Tests 1 and 2.

Student Accessibility Services

If you are a student with a disability, please contact Student Accessibility Services (SAS) for academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g., mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services
umanitoba.ca/student-supports/accessibility
520 University Centre
University of Manitoba
204 474 7423
student_accessibility@umanitoba.ca

Part of my commitment to student success is accommodating a diversity of needs and learning approaches to ensure that all students receive the support and attention they deserve. If you are facing any challenges related to food or housing and feel that it may be affecting your learning in this course, please reach out to me if you are comfortable doing so. I will do my best to help you access available resources and we can work together to ensure you achieve success in ENVR 1000.

Learner Supports

Writing and Learning Support: The Academic Learning Centre (ALC) offers services that may be helpful to you throughout your academic program. Through the ALC, you can meet with a learning specialist to discuss concerns such as time management, learning strategies, and test-taking strategies. The ALC also offers peer supported study groups called Supplemental Instruction (SI) for certain courses that students have typically found difficult. In these study groups, students have opportunities to ask questions, compare notes, discuss content, solve practice problems, and develop new study strategies in a group-learning format.

You can also meet one-to-one with a writing tutor who can give you feedback at any stage of the writing process, whether you are just beginning to work on a written assignment or already have a draft. If you are interested in meeting with a writing tutor, reserve your appointment two to three days in advance of the time you would like to meet. Also, plan to meet with a writing tutor a few days before your paper is due so that you have time to work with the tutor's feedback. These Academic Learning Centre services are free for U of M students. For more information, please visit the Academic Learning Centre website at: http://umanitoba.ca/student/academiclearning/. You can also contact the Academic Learning Centre by calling 204-480-1481 or by visiting 201 Tier Building.

University of Manitoba Libraries (UML) - As the primary contact for all research needs, your liaison librarian (if they weren't recently fired by Central Administration) can play a vital role when completing academic papers and assignments. Liaisons can answer questions about managing citations, or locating appropriate resources, and will address any other concerns you may have, regarding the research process. Liaisons can be contacted by email or phone, and are also available to meet with you in-person. A complete list of liaison librarians can be found by subject (http://bit.ly/WcEbA1) or name (http://bit.ly/1tJ0bB4).

In addition, general library assistance is provided in person at 19 University Libraries, located on both the Fort Garry and Bannatyne campuses, as well as in many Winnipeg hospitals. For a listing of all libraries, please consult the following: http://bit.ly/1sXe6RA. When working remotely, students can also receive help online, via the Ask-a-Librarian chat found on the Libraries homepage: www.umanitoba.ca/libraries

Mental Health: For 24/7 mental health support, contact the Mobile Crisis Service at 204-940-1781.

Student Counselling Centre: Contact SCC if you are concerned about any aspect of your mental health, including anxiety, stress, or depression, or for help with relationships or other life concerns. SCC offers crisis services as well as individual, couple, and group counselling. http://umanitoba.ca/student/counselling/; 474 University Centre; S207 Medical Services; 204-474-8592.

Student Support Case Management: Contact the Student Support Case Management team if you are concerned about yourself or another student and don't know where to turn. SSCM helps connect students with on and off campus resources, provides safety planning, and offers other supports, including consultation, educational workshops, and referral to the STATIS threat assessment team. http://umanitoba.ca/student/case-manager/index.html; 520 University Centre; 204-474-7423.

University Health Service: Contact UHS for any medical concerns, including mental health problems. UHS offers a full range of medical services to students, including psychiatric consultation. http://umanitoba.ca/student/health/**;** 104 University Centre, Fort Garry Campus**;** 204-474-8411 (Business hours or after hours/urgent calls).

Health and Wellness: Contact our Health and Wellness Educator if you are interested in information on a broad range of health topics, including physical and mental health concerns, alcohol and substance use harms, and sexual assault. http://umanitoba.ca/student/health-wellness/welcome.html**;** 469 University Centre**;** 204-295-9032.

Live Well @ UofM: For comprehensive information about the full range of health and wellness resources available on campus, visit the Live Well @ UofM website: http://umanitoba.ca/student/livewell/index.html

Traditional Territories Acknowledgement

The University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Oji-Cree, Dakota, and Dene peoples, and on the homeland of the Métis Nation. We respect the Treaties that were made on these territories, we acknowledge the harms and mistakes of the past, and we dedicate ourselves to move forward in partnership with Indigenous communities in a spirit of good-faith reconciliation and collaboration. Where I teach, the water comes from Treaty 3, the shores of Shoal Lake First Nations, and the electricity comes from generating stations on rivers in Treaty Areas 1, 3, and 5.

Because this land acknowledgement *does not constitute reconciliation by virtue of its inclusion here*, we will intentionally work towards reconciliation in this course by identifying and questioning the ways in which environmental issues disproportionately affect those who suffer from socioeconomic inequalities, from hydroelectric development to global climate change.

Use of Copyrighted Material

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Copyrighted works, including those created by me, are made available for private study and research and must not be distributed in any format without permission. For more information, see the University's Copyright Office website at umanitoba.ca/copyright/.