

## ENVR 1000 (A01/A02) ENVIRONMENTAL SCIENCE 1: CONCEPTS (3 CR HRS.)

**SEMESTER:** Fall, 2023 (September - December, 2023)

**INSTRUCTOR:** Leslie Goodman

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**OFFICE:** 440 Wallace Bldg (Dean's Office); **PHONE:** 204 474 6225

**OFFICE HOURS:** Thursdays 9:30 – 10:30 (or by arrangement)

*Office hours will take place virtually using the following Zoom URL -*

<https://umanitoba.zoom.us/j/93979735053?pwd=ZGYxZ2I3eWVTbFk5UmZiSXFvOWUxZz09>

Meeting ID: 939 7973 5053; Passcode: 481370

### COURSE DESCRIPTION

This course explores the environment through the conceptual framework of its physical, biological, and social components. Students are introduced to 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 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 (and often from Manitoba) are used throughout the course as case studies illustrating the environmental challenges we face and solutions that can be applied.

### INFORMATION ABOUT YOUR INSTRUCTOR

**Leslie Goodman, Senior Instructor, Environmental Sciences/Studies, University of Manitoba**

I am a senior instructor in Environmental Science and Studies at the University of Manitoba, where I have been on faculty since 2005. I hold a Bachelor of Science (Zoology) from the University of Calgary and Master of Science (Botany) University of Manitoba. I have been teaching environmental sciences for the past fifteen years and ENVR 1000 for the past 10 years. My research and professional training are in aquatic systems and water quality. In the early 1990's I conducted research on the Red and Assiniboine Rivers to explore the responses of phytoplankton to nutrient additions from treated sewage released by the City of Winnipeg. This research was a precursor to understanding the responses that were later observed in Lake Winnipeg and the overall decline in water quality due to a phenomenon referred to as eutrophication (something that you'll learn more about as you progress through the course). I worked in environmental consulting where I continued to contribute to surface water quality monitoring on the numerous rivers and lakes in the Province. I moved into undergraduate teaching in 2005 and I have worked with over 5,000 students through the various courses I teach. I also manage a Co-operative Education Option where I work closely with students to explore environmental careers in Manitoba.

### COURSE MATERIALS

There are a number of resources developed to assist students during the term. These are virtual resources that you can learn more about from your UM Learn website ([www.umanitoba.ca/umlearn](http://www.umanitoba.ca/umlearn)). These include:

- **Lecture Materials** – PowerPoint lecture slides
- **Additional Resources** - (including website links to key agencies such as Environment and Climate Change Canada and International Union for the Conservation of Nature; and a number of videos) that provide extra information that can be useful to your independent studies and research.
- **Optional Textbook** - that speaks to many of the case studies and content from the lectures. Use the textbook to augment your investigations into the major concepts. THE TEXTBOOK IS ELECTIVE.

The optional textbook for this course is:

Berg, Hagar, Goodman, Baydack. 2010. Visualizing the Environment: Canadian Ed. John Wiley & Sons.

To purchase the e-textbook from the bookstore, go to:

<https://www.campusebookstore.com/integration/AccessCodes/default.aspx?permalinkId=dd1a718c-5993-4c12-9143-8fd7a5e26816&frame=YES&t=permalink>

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

### IMPORTANT DATES IN FALL 2023

- September 6 - December 11 – Scheduled classes (A01 - T/R 1:00 – 2:15; A02 - M/W/F 11:30 – 12:20)
- October 2 – National Day for Truth and Reconciliation; No class
- October 9 – Thanksgiving Day; No class
- November 13 -17 – Remembrance Day; Reading Break; No class
- November 21 – Voluntary Withdrawal Deadline
- December 14 – 22 – Final Examination Period (Final Exam date TBA)

### COURSE DELIVERY AND EVALUATION CRITERIA

The format of the course delivery includes in-person lectures; 2 tests (delivered in class), and a final examination scheduled class or by the Registrar. There are numerous instances where you will be assigned tasks outside of the lecture to investigate topics, view assigned videos and conduct your own independent research on the concepts and theories.

There are 2 tests and a final examination with the course. The tests are based a mix of multiple choice, true/false and short answer questions over a 50 minute testing period. They are delivered at the start of the lecture period. There are no lectures on test days.

The final examination is scheduled by the Registrar during the Fall examination period (December 12 - 22). The date of the final exam is current TBA but typically is posted around the end of October. Go to <https://umanitoba.ca/registrar/final-exams> where exam details are posted.

Each test is closed book and is NOT cumulative. Each test is worth 25% toward your final grade in the course. The final examination IS cumulative covering ALL topics in the course. It is worth 50% toward the final course grade.

#### Dates for the Tests are as follows:

- **Test 1 – October 10 (A01)/11 (A02) (worth 25%)** – covers topics from Units 1, 2, and 3
- **Test 2 – November 7 (A01)/8 (A02) (worth 25%)** – cover topics from Units 4, and 5
- **Final Examination (worth 50%) – Scheduled by the Registrar and cumulative** covering ALL course topics; greater emphasis on topics not covered in test 2.

### IF YOU MISS A QUIZ 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 SCALE

Letter grades will be assigned at the completion of the course, as follows:

A+	Greater than 90%	C+	65-69%
A	80-89%	C	60-64%
B+	75-79%	D	50-59%
B	70-74%	F	Less than 50%

## ACADEMIC SUPPORTS

Academic Integrity refers to the values on which good academic work must be founded: honesty, trust, fairness, respect and responsibility. Academic integrity includes a commitment not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others.

Students found to have breached the regulations related to any form of academic misconduct including but not limited to impersonation, collusion, plagiarism and/or cheating are subject to academic investigations of misconduct that could include grades of "0" on quizzes/exam and possibly academic suspension.

**A Note about Copyright Materials** – I will provide you access to lecture notes. Students are required to adhere to copyright by ensuring they do not reproduce this information outside of the University of Manitoba learning environment and to any person not registered in the course. This includes (but not limited to): video recordings, class notes, quizzes, tests and/or examinations.

It is solely your responsibility to be aware of the Academic Integrity Policy and consequences of violating it. The policy is available in the General Calendar, accessible on the UM website.

## ATTENDANCE

Students are expected to attend the lectures. You are expected to complete assigned materials including video case studies and knowledge checks outside of lectures. These materials and links are found in the UM Learn website.

## COVID SAFETY AND STUDENT ACCESSIBILITY SERVICES (See Also Schedules A and B)

The University of Manitoba is committed to providing all students equal access to learning opportunities. "This means that our classroom, our virtual spaces, our practices, and our interactions should be as inclusive as possible. Mutual respect and the ability to listen to others are crucial to universal learning."

Student Accessibility Services (SAS) is the office that works with students who have permanent, chronic, or temporary disabilities to provide and/or arrange reasonable accommodations.

- Students who have, or think they may have, a disability (e.g. mental health, attention, learning, vision, hearing, physical, medical or temporary), are invited to contact Student Accessibility Services to arrange a confidential discussion at (204) 474-7423 (V), (204) 474- 9790 (TTY) or [student\\_accessibility@umanitoba.ca](mailto:student_accessibility@umanitoba.ca). Make your instructor aware of any accommodations early in the course.

## **LECTURE TOPICS (textbook readings, weekly schedule)**

Note – Week 1 starts September 4, 2023

### **UNIT 1: Introduction (Textbook Chapter 1 pages 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 and Resource Demand Assessment
- 1.4 Sustainable Development/Sustainability as a Resource Management Solution
- 1.5 Principles of Scientific Investigation and Scientific Methodology

### **UNIT 2: Structure and Function of Ecosystems (Textbook Chapter 5 pages 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 (Textbook Chapter 3 pages 66-73; Chapter 7 pages 200-231);**

*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 (Snow Geese in Peril video)

**Test 1 – October 10 (A01)/11 (A02) (worth 25%) – covers topics from Units 1, 2, and 3. Watch for details on Unit 3 topics covered in the test.**

### **UNIT 4: Atmosphere and Climate Change (Chapter 10 pages 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

### **Unit 5: Biodiversity Conservation Using Ecosystem Management (Textbook Chapter 1 pages 13-20; Chapter 5 pages 126-127, 153-156; Chapter 13 pages 470-489; Chapter 8 pages 248-257, 267-271; Chapter 7 pages 217-231); *Plan to work through Unit 5 during weeks 7 and 8***

- 5.1 Linking the Concepts of Sustainability to the Ecosystem Management Approach
- 5.2 Parks and Protected Areas (Minimum Viable Population Size; Ecological Integrity; Historic Reference Condition; Ecological Islands; Conservation Corridors; Biosphere Reserves; World Heritage Sites; and Marine Protected Areas)
- 5.3 Conserving Species at Risk (Mountain Gorillas in Uganda)
- 5.4 Managing Invasive Alien Species
- 5.5 Sustainable Forestry Management (Great Bear Rainforest)

**Test 2 – November 7 (A02)/8 (A01) (worth 25%) – cover topics from Units 4 and 5. Watch for details on specific topics covered from Unit 5.**

**UNIT 6: Soils and Sustainable Agroecosystem Management / Restorative Ecology (Chapter 8 pages 236-247; 263-266; 271-280); *Plan to work through Unit 6 during week 9***

- 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 Ecological Restoration
- 6.6 Sustainable Agriculture Management

**UNIT 7: Aquatic Resources and Their Management (Chapter 9 pages 141-142, 286-320, 334-336)  
*Plan to work through Unit 7 during weeks 10 and 11***

- 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 (Chapter 4 pages 100-106; 110-119)  
*Plan to work through Unit 8 during weeks 12, and 13***

- 8.1 Types, Movement and Fate of Toxic Chemicals in the Environment
- 8.2 Management of Harmful Chemicals: Risk Assessment and Dose Response Studies
- 8.3 Case Studies: Persistent Organic Pollutants (DDT) and Mercury

**The Final Examination (worth 50%) is scheduled by the Registrar and is cumulative covering ALL course topics. Note that there will be a greater emphasis on topics not covered in test 2 (Units 5, 6, 7, and 8).**

## Schedule A - Students - UM COVID-19 (As of August 18, 2022)

The University of Manitoba (the “UM”) is committed to maintaining a safe learning environment for all students, faculty, and staff. Further details regarding University of Manitoba requirements and protocols is available at

<https://umanitoba.ca/covid-19/health-safety> and <https://umanitoba.ca/covid-19/students>

Masks are mandatory in Fall Term. KN95 masks are highly recommended, but 3-ply medical masks (minimum ASTM Grade 2) are also acceptable.

**Masks must be worn in all indoor spaces** on UM campuses, including:

- all common spaces
- classrooms
- labs doorways
- corridors
- work spaces
- all libraries
- all study spaces

UM will supply all necessary masks, both KN95 masks (highly recommended) and the 3-ply medical masks (minimum ASTM Grade 2), which are also acceptable.

Unless you are in a food-designated area, you must **keep your mask on and covering your mouth and nose** at virtually all times, including:

- indoors even when physical distancing is possible
- trips to the bathroom
- participating in UM-sanctioned activities off-campus at any time when two metres distancing is not possible

If you do not follow masking and other requirements you will be asked to leave the learning space and may only return to the class already in progress when you have complied with these requirements.

### Illness

Remember: **STAY HOME IF YOU HAVE SYMPTOMS OR ARE ILL.** If you become sick or are required to self-isolate you should notify your instructor by email so you can develop a plan to complete the course learning outcomes while you are absent.

## Schedule B - Academic 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](http://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 site: <http://umanitoba.ca/student/livewell/index.html>

## Copyright Information

All students are required to respect copyright as per Canada's *Copyright Act*. Staff and students play a key role in the University's copyright compliance as we balance user rights for educational purposes with the rights of content creators from around the world. The Copyright Office provides copyright resources and support for all members of the University of Manitoba community. For more information: <http://umanitoba.ca/copyright>

## Rights and Responsibilities

- **Your rights and responsibilities:** As a student of the University of Manitoba you have rights and responsibilities. It is important for you to know what you can expect from the University as a student and to understand what the University expects from you. Become familiar with the policies and procedures of the University and the regulations that are specific to your faculty, college or school.
- The [Academic Calendar](http://umanitoba.ca/student/records/academiccalendar.html) <http://umanitoba.ca/student/records/academiccalendar.html> is one important source of information. View the sections *University Policies and Procedures* and *General Academic Regulations*.
- While all of the information contained in these two sections is important, the following information is highlighted.
- If you have questions about your grades, talk to your instructor. There is a process for term work and final **grade appeals**. Note that you have the right to access your final examination scripts. See the
- Registrar's Office website for more information including appeal deadline dates and the appeal form: <http://umanitoba.ca/registrar/>
- You are expected to view the General Academic Regulation section within the Academic Calendar and specifically read the **Academic Integrity** regulation. Consult the course syllabus or ask your instructor for additional information about demonstrating academic integrity in your academic work. Visit the Academic Integrity Site for tools and support <http://umanitoba.ca/academicintegrity/> View the **Student Academic Misconduct** procedure for more information.
- The University is committed to a respectful work and learning environment. You have the right to be treated with respect and you are expected conduct yourself in an appropriate respectful manner. Policies governing behavior are included in the next section.

## Policies and Services Information

- **Respectful Work and Learning Environment:**  
[http://umanitoba.ca/admin/governance/governing\\_documents/community/230.html](http://umanitoba.ca/admin/governance/governing_documents/community/230.html)
- **Student Discipline**  
[http://umanitoba.ca/admin/governance/governing\\_documents/students/student\\_discipline.html](http://umanitoba.ca/admin/governance/governing_documents/students/student_discipline.html) and,
- **Violent or Threatening Behaviour**  
[http://umanitoba.ca/admin/governance/governing\\_documents/community/669.html](http://umanitoba.ca/admin/governance/governing_documents/community/669.html)
- If you experience **Sexual Assault** or know a member of the University community who has, it is important to know there is a policy that provides information about the supports available to those who disclose and outlines a process for reporting. The **Sexual Assault** policy may be found at:  
[http://umanitoba.ca/admin/governance/governing\\_documents/community/230.html](http://umanitoba.ca/admin/governance/governing_documents/community/230.html) More information and resources can be found by reviewing the Sexual Assault site <http://umanitoba.ca/student/sexual-assault/>

**Intellectual Property** - For information about rights and responsibilities regarding **Intellectual Property** view the policy:

[http://umanitoba.ca/admin/governance/media/Intellectual\\_Property\\_Policy\\_-\\_2013\\_10\\_01.pdf](http://umanitoba.ca/admin/governance/media/Intellectual_Property_Policy_-_2013_10_01.pdf)