

ENVR 1000 (A01/A02) 3 Cr.Hrs.
ENVR 1000 Environmental Science 1: Concepts
Winter 2019

INSTRUCTOR: LESLIE GOODMAN

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Office Hours: Tuesday/Thursday 2:30 – 3:30; or by email arrangement

COURSE DESCRIPTION:

This course explores the environment through the conceptual framework of its physical, chemical, and biological 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, with consideration of the interactions and impacts to biotic processes. Strategies that promote sustainable management of natural resources are described through case study of parks and protected areas, endangered species management, water pollution abatement and alternative energy sources.

Note that this course is also available as a distance education offering (ENVR 1000 D01).

COURSE MATERIALS:

Textbook:

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

Note: This is also available from Dafoe and Machray Libraries through their Reserve Desks.

UM LEARN Website: www.umanitoba.ca/umlearn

A virtual classroom is available online through UM Learn. You need to access this site and become familiar with the resources it offers **as soon as possible** as this is where you will find all supporting information related to the lectures.

Important resources are available on the UM Learn site and organized in various tabs that include:

- **Course Home** – announcements will be made periodically regarding milestones, tests, videos etc. Watch for announcements frequently.
- **Resources** – access to lecture summaries, unit objectives, and additional reading resources (such as links to documentaries and movies available on the Internet).
- **Communication** – send the Instructor an email. **NOTE that the university will only use your U of M email account for official communications.**
- **Assessments** – grades are available on-line through the course homepage.

EVALUATION CRITERIA:

Test 1	25%
Test 2	25%
Final Exam (Scheduled by the Registrar)	50%
Total	100%

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 REGULATIONS AND EXPECTATIONS:

- **Final Examination:** All students must write the final examination to receive a passing grade in the course. Failure to write the final examination without a valid medical certificate or compassionate reason (e.g. death of an immediate family member) will result in a mark of zero on the final examination and a grade of F(NP) in the course. ***Note that deferral of a final examination can only be granted by your home faculty student advisor.***
- **Recording Class Lectures:** Leslie Goodman at the University of Manitoba holds copyright over the course materials and lectures that form the components of this course. No audio or video recording of lectures is allowed in any format, openly or surreptitiously, in whole or in part without permission of the Instructor. Course materials are for the participant's private study and research.
- **Attendance:** Attendance over the period of this course is expected of all students enrolled in this course. Please note the following penalty: a student may be debarred from class, laboratories, and examinations by action of the dean/director for persistent non-attendance.
- **Academic Dishonesty:** Plagiarism, cheating or impersonation in the completion of assignments, and at examinations, are very serious offences. Students caught doing so may be debarred from class with further risk of academic penalty and possible expulsion. All graded work must be independent.

The following provide a few examples of academic dishonesty that students in this course should be aware of:

- copying from another student during examinations;
- permitting other students access to your exam script by displaying this openly while writing your exam. Keep your materials concealed and confidential.
- copying instructor answer sheets from a previous year;

Academic Supports: The University of Manitoba provides many services and supports to encourage good scholarship and encourage all members and students to maintain a respectful work and learning environment. Policies have been developed regarding threatening behavior, or assaults whether verbal or physical to support victims and discipline offenders. For more information on these see Schedule A attached and available on the UM Learn site.

- **Department Policies** <http://umanitoba.ca/faculties/environment/departments/geography/index.html>
- **Student Advocacy** - <http://umanitoba.ca/student/advocacy/>; 520 University Centre; 204 474 7423; student_advocacy@umanitoba.ca

Important Dates in Winter 2019:

Test 1 (in class) – February 4 (A01); February 5 (A02)
Test 2 (in class) – March 11 (A01); March 12 (A02)
Final Exam – Exam Series April 11 - 26; 2 hours in length
Louis Riel Day (no class) – February 18
Winter Term Break (no classes) – February 19 - 22
Voluntary Withdrawal Deadline - March 20 (no refund)
Last Day of Classes – April 9

LECTURE TOPICS – refer to the UM Learn as well

UNIT 1: Introduction (pages 2-11; 13-19; 25-29; 53-59)

- 1.1 Definitions of Environment and Environmental Sciences
- 1.2 Perpetual, Nonrenewable and Renewable Resource Categories – Why 3 categories?
- 1.3 Long-Term Projections of Resource Availability – Ecological Footprint Assessment
- 1.4 Management of Resources through Sustainable Development

UNIT 2: Features of the Environment (pages 126-140; 142-152; 202-207)

- 2.1 The Scientific Method Uncovers How the Environment Works
- 2.2 Ecological Levels of Organization
- 2.3 Systems and Feedback in the Environment
- 2.4 Energy Flow and Food Chains/Webs
- 2.5 Biogeochemical Cycles of Carbon, Nitrogen and Phosphorus
- 2.6 Ecological Niche and Species Interactions – Competition, Symbiosis, Predation and Species Responses

UNIT 3: Biodiversity and Conservation (pages 153-154; 200-220; 248-255; 68-73; 267-271)

- 3.1 Biodiversity and the Link to Our Ecosystem Goods and Services
- 3.2 Community Interactions and Trophic Cascades, Keystone Species – *Wolves of Yellowstone National Park*
- 3.3 Population Dynamics – Exponential and Logistic Growth Patterns
- 3.4 Biodiversity Management – Human Impacts and Conservation Strategies
Population Overabundance; Invasive Species; Species at Risk
Conservation Through Parks and Protected Areas; Sustainable Forestry Practices

UNIT 4: Ecotoxicology (pages 100-106; 110-119)

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

UNIT 5: Sustainable Agriculture and Restorative Ecology (pages 236-247; 263-266; 271-275; 277-280)

- 5.1 Approaches in Agriculture
- 5.2 The Green Revolution: Pros and Cons
- 5.3 Environmental Impacts of Agriculture
- 5.4 Soil Features and Conservation
- 5.5 Sustainable Agriculture: Soils, Biodiversity, and Pest Management
- 5.6 Restorative Ecology Case Study: Sustainable Agriculture in the Amazon; Restorative Ecology in China, and Africa

UNIT 6: Aquatic Resources and Management (pages 141-142; 286-320)

- 6.1 Properties and Movement of Water – Surface and Groundwater
- 6.2 Sources of Water Pollution and Management Strategies
- 6.3 **Case Study: Save My Lake** (*may be assigned*)
- 6.4 Sewage Treatment and Storm Water Management
- 6.5 Water Conservation – surface, groundwater, and alternative withdrawals; Demand Management in Canada
- 6.6 **Case Study: California Dry**

UNIT 7: The Atmosphere Climate Change and Management (pages 340-348; 348-366; 368-382)

- 7.1 General Features of the Atmosphere
- 7.2 Global Climate System, Energy Budget and Climate Change
- 7.3 Case Study - Arctic Sea Ice Changes and Global Implications
- 7.4 Climate Change Mitigation and Adaptation
- 7.5 Air Pollution – Smog and Acid Rain

Note: The Final Examination is cumulative and covers all materials lectured, but more heavily weighted on materials after the midterm. Concepts listed above that are not described in lecture due to time limitations will not be included in the final examination.

Schedule A

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/1t0bB4>.

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 Counseling 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; 5207 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 to 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
- **Student Discipline** 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
- 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 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