

ENVR 1000 (A01 and A02) 3 Cr.Hrs.
ENVR 1000 Environmental Science 1: Concepts
Winter 2016

INSTRUCTOR: LESLIE GOODMAN

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Office Hours: Mondays/Wednesdays 10:30 to 11:30 or by email arrangements (preferred)

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.

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.

SEE THE INSTRUCTOR SHOULD YOU HAVE ANY DIFFICULTIES WITH ACCESS TO INFORMATION.

EVALUATION CRITERIA:

Quiz 1 – February 3 rd (A01); February 4 th (A02)	25%
Quiz 2 – March 9 th (A01); March 10 th (A02)	25%
Final Examination – TBA (Scheduled by the Registrar; cumulative)	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%

DEPARTMENT POLICIES:

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.***

COURSE ATTENDANCE AND ACADEMIC DISHONESTY: Requirements for course attendance and rules regarding academic dishonesty are found in the General Academic Regulations and Policy Section of the University of Manitoba *Undergraduate Calendar*.

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

- copying from another student during quizzes, tests and examinations;
- copying instructor answer sheets from a previous year;
- copying text from the Internet or other sources without appropriate referencing.

Important Dates in Winter 2016:

Quiz 1 – February 3rd (A01); February 4th (A02)
 Quiz 2 – March 9th (A01); March 10th (A02)
 No Classes (Louis Riel Day) – February 15th
 No Classes (Reading Break) – February 15th – February 19th
 Voluntary Withdrawal Deadline - March 18th
 No Classes (Good Friday) – March 25th
 Last Day of Classes – April 8th
 Final Examination Date – TBA (scheduled between April 11th to April 25th)

LECTURE TOPICS – refer to the UM Learn as well**UNIT 1: Introduction (pages 2-11; 13-20; 25-30; 53-59)**

- 1.1 Definitions of Environment and Environmental Sciences
- 1.2 Nonrenewable and Renewable Resource Categories
- 1.3 Long-Term Projections of Resource Availability – Ecological Footprint
- 1.4 Resource Management through the Assessment of Ecological Footprints and Implementation of Sustainable Development
- 1.5 The Scientific Method Uncovers How the Environment Works

UNIT 2: Structural and Functional Features of the Environment (pages 126-140; 142-152; 192-195; 162-187)

- 2.1 Systems and Feedback
- 2.2 Energy Flow and Food Chains/Webs
- 2.3 Biogeochemical Cycles of Carbon, Nitrogen and Phosphorus
- 2.4 Ecological Niche and Biotic Interactions in the Environment
- 2.5 The Ecosystem Concept
- 2.6 Succession and Ecosystem Disturbance
- 2.7 World Biomes and Aquatic Ecosystems (*assigned*)

UNIT 3: Biological Resources and Their Management (pages 200-227; 248-257; 68-73; 267-271)

- 3.1 Biodiversity and Ecosystem Health
- 3.2 Keystone Species - **Wolves of Yellowstone National Park**
- 3.3 Major Threats to Biological Diversity
- 3.4 Population Dynamics - Exponential and Logistic Growth Patterns
- 3.5 Biodiversity Management – *assigned mandatory videos*
Population Overabundance (in-class: **Snow Geese in Peril**),
Species at Risk (assigned: **Shadows of the Forest**), and
Invasive Species (assigned: **Silent Invaders**)
- 3.6 Ecosystem Management through Parks And Protected Areas and Sustainable Forest Practices
Riding Mountain National Park – Biosphere Reserve
Great Bear Rainforest Ecosystem Management (*assigned video: Great Bear Rainforest*)

UNIT 4: Toxins and Environmental Health (pages 100-106; 110-119)

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

UNIT 5: Agroecosystems and Sustainable Agriculture (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

UNIT 6: Aquatic Resources and Their Management (pages 286-320)

- 6.1 Properties and Movement of Water
- 6.2 Water Pollution Challenges and Management
- 6.3 **Assigned Video: Save My Lake**
- 6.4 Surface Water Runoff and Urban Stormwater Management
- 6.5 Water Consumption and Conservation – Surface and Groundwater Withdrawals
- 6.6 In-Class Video – **California Dry**

UNIT 7: Atmospheric Pollutants and Their Management (pages 368-382; 392-407; 416-434)

- 7.1 General Features of the Atmosphere
- 7.2 Global Climate System and Climate Change
- 7.3 Case Study - Arctic Sea Ice Changes and Global Implications
- 7.4 Conventional and Alternative Energies

Note: The Final Examination is cumulative and covers all materials lectured. Concepts listed above that are not described in lecture due to time limitations will not be included in the examination.