



## An Introduction to Ecology and Ecosystems

Biology 228.3.1

Term 1, 2014-2015

**Instructors:** Dr. D.M. Lehmkuhl (Course Co-ordinator & Lecturer)  
Room 241 W.P. Thompson (Biology) Bldg.  
Telephone : 306-966-4408,  
email : [dennis.lehmkuhl@usask.ca](mailto:dennis.lehmkuhl@usask.ca)

Mr. Scott Halpin (Lab Coordinator & Lecturer)  
Room 150 Thompson (Biology) Building  
Telephone: 306-966-4493,  
email: [scott.halpin@usask.ca](mailto:scott.halpin@usask.ca)

**Lecture:** 9:30–10:20 (Monday, Wednesday, Friday)  
Room 106 W.P. Thompson (Biology) Bldg.

**Lab:** 1:30–5:30 Monday or Tuesday or Wednesday;  
or 8:30–12:30 Thursday  
Room 212 W.P. Thompson (Biology) Bldg.

## Description and Course Objectives:

This course is designed for undergraduate students that have an interest in broadening their studies in biology; however, we encourage students from a variety of departments to take this course because the principles of ecology cross several disciplines within the Colleges of Arts and Science, Agriculture, and Veterinary Medicine.

Major topics include: an introduction to ecological principles and the functioning of aquatic and terrestrial ecosystems; individual-based ecology including behaviour; population dynamics; community structure and dynamics; ecosystem production; energy flow and material recycling; and conservation biology.

## Learning Objectives:

Through lectures, assigned readings, and laboratory exercises students will:

- Develop an introductory understanding of ecology. This understanding will be in 4 major ecological sub-disciplines: population, community, ecosystem and global ecology.
- Be able to describe how the scientific method is applied in examples of ecological studies.
- Practice and apply numerical skills by compiling, summarizing and interpreting basic scientific data.
- Build critical thinking skills through the process of evaluating scientific information in Biol 228 laboratories and from the literature.
- Become familiar with the impacts of humans on ecological systems.
- Be able to describe mechanisms that support biological diversity at the individual, community, landscape, and global scales;
- Develop a sense of place by acquiring new knowledge about the ecology of populations, communities and ecosystems of Saskatchewan and Canada

**Prerequisites:** BIOL 121 or GEOG 120 or 6 credit units in GEOL. Students with credit for BIOL 253 or PLSC 213 will not receive credit for BIOL 228.

**Textbook:** Smith M. S., R. L. Smith, and I. Waters. 2014. Elements of Ecology. 1<sup>st</sup> Canadian Edition. Pearson. Upper Saddle River, New Jersey.

## Grading Criteria:

Mid-term exam	20%
Final exam	40%
Laboratory	40%
Total	100%

BIOLOGY 228.3.1  
LABORATORY SCHEDULE 2014

**LABS BEGIN THE WEEK OF SEPTEMBER 8<sup>th</sup>: Schedule is subject to change based on weather and availability of transportation.**

SEP	3 - 5	<b><u>NO LAB</u></b>
SEP	8 -12	Beaver Creek Field Trip; An Introduction to Saskatchewan Ecosystems
SEP	15- 19	Saskatoon Riverbank Field Trip; An Introduction to Saskatchewan Ecosystems
SEP	22 -26	Quantitative Vegetation Sampling Methods * <b><u>Quiz 1 (on Beaver Creek and Riverbank Labs)</u></b>
SEP	29-OCT 3	Statistical Analysis of Data; The $X^2$ Test*
OCT	6 - 10	Energy Flow and Materials Distribution in Terrestrial Ecosystems*
OCT	13 – 17	<b><u>NO LAB</u></b>
OCT	20 – 24	Energy Flow and Materials Distribution in Aquatic Ecosystems *
OCT	27 – 31	An Investigation of Population Growth I: Exponential Growth Models* <b><u>Quiz 2 (on Quantitative Sampling, X<sup>2</sup> and Energy Flow Labs)</u></b>
NOV	3- 7	An Investigation of Population Growth II: Logistic Growth Models* <b><u>Quiz 3 (on Quantitative Vegetation Sampling and X<sup>2</sup> Labs)</u></b>
NOV	10-14	<b><u>NO LAB</u></b>
NOV	17 - 21	<b>Review</b>
NOV	22	<b><u>FINAL LAB EXAM Saturday 9:30am to 12:00 pm</u></b>

\* denotes labs with in-lab assignments

LABORATORY: Room 212 Biology, Monday, Tuesday, Wednesday, 1:30-5:30 pm  
Room 212 Biology, Thursday, 8:30 am-12:30 pm

Lab expectations and evaluation/assignment requirements will be discussed in the first in-house lab period.

**LAB VALUE: 40% of student grade; 25% from quizzes/assignments, 15% from lab exam**

<b>Fall 2014 Lecture Schedule</b>		
<b>Date</b>	<b>Topic</b>	<b>Recommended Readings</b>
Sept 3-Oct 11 (Lehmkuhl)	Introduction: Concepts of Ecology & Ecosystems	Chap 1 (All readings in "Elements of Ecology")
	Carbon Cycle: Laws of Thermodynamics	
	Carbon Cycle: Energy Flow, Food Webs	
	Nitrogen, Phosphorus, Sulfur Cycles (and other cycles of interest)	
	Aquatic Systems: Freshwater and Marine Ecosystems	
	Terrestrial Ecosystems: Grasslands and Boreal Forest	
<b>Oct 13</b>	<b>Thanksgiving Holiday</b>	
Oct 15- Dec 3 (Halpin)	Life History Patterns & the Basics of Population Ecology	Chap 8, 9
<b>Oct 20</b>	<b>BIOL 228 Mid-Term Exam</b>	
	Populations: Patterns and Growth	Chap 10
	Competition Within and Among Species	Chap 11, 12, 13
	Species Interactions: Predation, Parasitism, Mutualism	Chap 14, 15
<b>Nov 10,12,14</b>	<b>Midterm Break</b>	
	Species Interactions and Community Dynamics	Chap 17
	Species Interactions and Community Structure and Diversity	Chap 16,18,19
Dec 5	Review	
<b>TBA</b>	<b>Final Exam</b>	

### **Email Policy:**

Although email is a useful communication tool, please consider your email inquiries carefully. For example, if you have a question that has a likely answer in your text or lecture notes, please refer to these resources first. Inquiries that may require a lengthy response should be posed after class, or during your laboratory time.

### **Deferred Examinations and Labs:**

You must take examinations during their scheduled periods, and treat due dates for lab reports as seriously as that of a scheduled exam. If you are absent from a lecture exam, or miss a due date for a report for a reason that is University approved (e.g., illness, death in the family, official University business), then provide the course organisers with the appropriate documentation (required in ALL circumstances) in a timely manner (within three days), and arrangements to help you meet course requirements will be made. Final exams are rescheduled ONLY with a fee and by application to your College, following University-approved procedures.

### **Special Needs or Disabilities:**

Students with special needs or disabilities are encouraged to contact the instructor and let me know about your needs as soon as classes begin. Every effort will be made to accommodate the requirements of students with special needs. Please take advantage of the programs offered by Disability Services <http://www.students.usask.ca/disability/dss/>

### **Academic Honesty:**

The Guidelines for Academic Conduct from University of Saskatchewan Council can be found at: [http://www.usask.ca/university\\_secretary/honesty/](http://www.usask.ca/university_secretary/honesty/).

Honesty and integrity are expected in class participation, examinations, assignments, and other academic work.

- Perform your own work unless specifically instructed otherwise;
- Use your own work to complete assignments and exams;
- Cite the source when quoting or paraphrasing someone else's work;
- Follow examination rules;
- Be truthful on all university forms;
- Discuss with your professor if you are using the same material for assignments in two different courses;
- Discuss with your professor if you have any questions about whether sources require citation;
- Use the same standard of honesty with fellow students, lab instructors, teaching assistants, sessional instructors and administrative staff as you do with faculty.

**Beware of plagiarism!!!!** Academic honesty is a must in our institution and plagiarism will be strictly penalized.

You are expected to consult the Student Academic Misconduct Regulations (University Council): [http://www.usask.ca/university\\_secretary/pdf/dishonesty\\_info\\_sheet.pdf](http://www.usask.ca/university_secretary/pdf/dishonesty_info_sheet.pdf)