

BIOLOGY 228.3 Q1

Lecture Schedule, Summer Session, May 7 – 28, 2014

(Lecture: Rm. 125 Biology, 8:30 – 10:50 am)

Instructor: Professor D. Lehmkuhl, Office 241 Biology, Telephone: 966-4408

Text: **Elements of Ecology** or **Ecology and Field Biology** (any edition)
Smith, R. L. and T. M. Smith (Optional: Copies available in Natural Sciences Library)

Lab: 1:30 -5:30, Rm 212 Biology

Fieldtrips: Hat, rain gear, good shoes, long pants recommended, food, water, sun screen, insect repellent. Optional: binoculars, field guides to plants and animals.

Evaluation: Midterm exam.....20%
Laboratory.....40%
Final Exam.....40%

Attendance of all lectures is required. Written excuses are required for absences. Students with disabilities are encouraged to self-identify and provide documentation at the earliest possible time so that appropriate measures may be arranged

All suspected incidences of cheating/academic dishonesty will automatically be forwarded to the Academic Dishonesty Committee of the College of Arts and Science for assessment and action.

All students are expected to review the Guidelines for Academic Conduct and associated documents posted at http://www.usask.ca/university_secretary/honesty/. These guidelines are set by the University Council and individual colleges may have additional regulations which are in addition to, but consistent with, those of the university council.

Missed Examinations:

In the event of a missed midterm or lab quiz/exam the student is required to contact the instructor within 3 working days IN PERSON or by telephone (email is not acceptable). Supporting documentation for exceptional circumstances (illness, bereavement etc.) must be supplied in order for consideration of deferred testing to proceed. Failure to comply will result in a mark of zero.

In the event of a missed Final Exam, college guidelines apply and the student must apply to the Dean's Office of the college in which he/she is registered. The application for a deferred Final Exam must be filed within 3 working days of the scheduled Final Exam. Supporting documentation for exceptional circumstances (illness, bereavement etc.) must be supplied in order for consideration of deferred testing to proceed. Failure to comply will result in a mark of zero.

Email Policy:

Questions relating to explanations of course content are best asked after class or during lab periods. Instructors reserve the right to answer emails at their discretion.

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/disabilities/dss/>)

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 with 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 behavior; population dynamics; community structure and dynamics; ecosystem production; energy flow and material recycling; and conservation biology. Your instructors have expertise in aquatic ecosystem ecology, vegetation ecology and field data collection methods for terrestrial and aquatic systems.

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 methods 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 evaluation 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 1221 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.

LECTURE SCHEDULE

May 7 -9, 12

- Introduction, definitions of ecology, the scientific method, history of ecology, branches of ecology.
- Community Ecology, biodiversity, definition and significance of communities, properties of communities, density, diversity, stability, succession, niche, habitat, competition. Landscape ecology, definitions, concepts, applications.

May 13

- All day field trip, Saskatchewan River, Introduction to Saskatchewan and local ecosystems.
- Community ecology continued, begin global ecology.
- Global ecology, atmosphere, water, plate tectonics, origin of ocean basins, mountains, deep ocean trenches.

May 14 – 16

- Biogeochemical cycles, carbon cycle: Where is carbon and what is it doing; Greenhouse effect, nitrogen, phosphorus, sulfur cycles, human impacts on cycles, eutrophication, soil fertility, acid rain, other types of pollution, environmental degradation.
- Catch-up or get ahead lecture
- **MIDTERM EXAM** – May 21st
- Compare and contrast energy flow with cycles of materials. Laws of Thermodynamics, primary productivity, secondary productivity, efficiencies in ecological systems, pyramids, grazing and detrital food chains, ecological pyramids and bioconcentration.
- Population ecology, population growth, age structure, survivorship, human populations.

May 20 – 28

- Introduction to terrestrial ecosystems and biomes, soils, some major world soil types, properties of water, pH, buffer systems, significance to biosphere.
- Aquatic Systems: Freshwater lakes, thermal stratification, oxidized microzone; Streams, Rivers, Continuum Concept, reservoirs (rivers converted to lakes). Physical and Biological consequences, especially noting the situation in Saskatchewan, e.g., Gardiner Dam.
- Marine Systems: Significance and major feature of each, especially in relation to cycles, productivity, and unique features.
- Catch-up lecture
- **Review**

May 29th or 30th

- **FINAL EXAM: see website for exam date**
(<http://students.usask.ca/current/academics/exams/spring-summer.php>)

Laboratory Schedule, Summer Session, 2014

May	7	NO LAB
	8	Comparative Analysis of Vegetation Sampling Methods*
	9	Basic Statistical Analysis of Ecological Data; The X ² Test*
	12	Energy Flow and Biomass Distributions in Terrestrial*
	13	Energy Flow and Biomass Distributions in Aquatic Ecosystems*
	14	Exponential Population Growth*
	15	Logistic Population Growth*
	16	NO LAB
	19	Victoria Day NO LAB
	20	NO LAB
	21	Beaver Creek Field Trip; Introduction to Saskatchewan and Local Ecosystems (ALL DAY TRIP 10:00 TO 5:30)
	22	South Saskatchewan Riverbank Fieldtrip
	23	LAB REVIEW* / Guest Seminars TBA
	26	<u>Final Lab Exam</u>

* indicates Lab Assignment

Instructor: Scott Halpin
Rm 150 Biology, 306-966-4493 scott.halpin@ usask.ca

Lab: 1:30 -5:30, Rm 213 Biology

Fieldtrips: Hat, rain gear, good shoes, long pants recommended, food, water, sun screen, insect repellent. Optional: binoculars, field guides to plants and animals.

Evaluation: This laboratory is worth 40% of your total mark for Biology 228.3

Lab Assignments/Quizzes25%
Final Lab Exam.....15%

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