



BIOL 410.3 – CURRENT PERSPECTIVES IN ENVIRONMENTAL BIOLOGY 2014-15 Term 2

Schedule: Tues/Thurs 8:30 am – 9:50 am
Location: Biology 124
Start date: January 6, 2015

Instructors:

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Course Description

Course prerequisites

BIOL 228 (Introduction to Ecology and Ecosystems)
 BIOL 301 (Critical Issues in Biology)
and Permission of the Department

This course consists of modules taught by faculty in the environmental sciences. Students will participate together in weekly seminars, assigned readings, essays and oral presentations to learn about current issues in the environment and cutting-edge research with an environmental focus. BIOL 410.3 is designed to be a capstone course at the fourth year for students in the BSc ENVB program (4 year and Honours) and will be relevant for future career paths in environmental sciences. It will allow students to interact with faculty and learn about current research in the environment being conducted at the University of Saskatchewan. Students will have a chance to apply their diverse interdisciplinary knowledge to current environmental issues in biology, extend their knowledge to the community, refine communication and analytical skills and develop a sense of community with their peers.



Rationale

The Earth is currently experiencing unprecedented rates of environmental change brought on by the activities of an expanding human population. This change is creating conflicts and challenges in the management of environmental resources to sustainably support human societies and other biotic communities. Methods in environmental biology and applied ecology form a central tool in effectively dealing with these issues. The aim of this course is to expose students to the theoretical frameworks and practical skills needed to address current challenges in environmental biology using a scientific approach.

This course complements other courses in biology that focus on applied ecology and environmental issues. It is intended to serve as a capstone course for an undergraduate major in Environmental Biology. Within each module of the course, students will be exposed in depth to a different problem or issue in environmental biology, and will conduct research or data analysis exercises to explore issues and possible solutions. Students will gain valuable experience in assessing the current scientific literature on an issue, identifying knowledge gaps, and proposing means to address gaps or apply knowledge to existing problems. Group research activities and discussion will also facilitate the expression and integration of different viewpoints and management priorities as related to environmental issues. In addition, students will be exposed to different ways and career paths for applying skills in environmental biology to managing and predicting change in Earth's ecological systems.

Course aims and objectives

The aim of this course is to expose students to the theoretical frameworks and practical skills needed to address issues in environmental biology using a scientific approach. As biologically literate and informed citizens or employees, little of your time will be spent watching lectures, rather you are more likely to be involved in *application* of information using the following skills:

- decision-making
- problem-solving
- investigation
- policy analysis
- debate
- critical and creative thinking
- information-retrieval
- communication

This course is structured to address many of these skills and to integrate knowledge from your Environmental Biology degree major. Instruction by faculty will expose students to a range of different issues and areas of expertise. An emphasis will be placed on examining current issues in applied ecology that have the potential to inform and influence how we manage our impacts on diverse ecosystems.



Learning Outcomes

By the end of this course, students will:

- ❖ Develop familiarity and expertise in current issues related to 6 different topics of environmental biology. This expertise will be built by integrating information derived from a variety of sources, such as introductory lectures, assigned readings of primary research or synthesis articles, and independent research to survey the scientific literature or directly analyze ecological datasets.
- ❖ Be able to compile, summarize, and interpret scientific knowledge obtained from a literature review or primary data analysis.
- ❖ Gain experience in presenting research results through oral and written formats.
- ❖ Develop skills in the management and implementation of individual or small group exercises and research projects, such as setting and meeting project timelines, formulating research objectives, and integration of components into a final presentation.
- ❖ Apply your skills and extend them to the wider community
- ❖ Appreciate the complexity of addressing management issues in socio-ecological systems.
- ❖ Identify tools, processes, and roles for biologists to make positive contributions to addressing issues in environmental biology.

Format and Procedures

The course is structured around 2 – 1.5 hour sessions of in-class activities per week. The format of those activities will vary, and is likely to include introductory topic lectures by a faculty member or guest practitioner, group discussions, tutorials for research activities, and active group work on research topics. There will also be time for students to present the results of their research and work on a community service learning project. There is no required text, but there will be recommended and required readings for each topic. Access to these readings will be posted through Blackboard.

There are 6 sections or modules in the course that will each address a different topic or issue in environmental biology. The topics of the modules change from year-to-year, depending on the instructors and the issues of the day. Students will frequently be engaged in conducting some sort of research or analysis exercise for individual modules. In class exercises may be based on independent or group work, or a combination of the two. To facilitate collaborative work, students are asked to be considerate and respectful of their classmates in all discussions. Students who are experiencing difficulties with group work are encouraged to bring any issues to the attention of the instructor, who will work with the students to develop a solution to the problem.

Grading scheme

Students will receive a final mark for the course that will be a number grade from 0 to 100% allocated based on the activities described below. Grading of assignments and participation will be done by the instructor covering that topic in the course. For the final project, grading will be an average of independent marking by at least 2 course instructors.



Activity	Description	Mark
Participation and performance	Preparation, participation and engagement in class group activities and discussions	20
Community service learning activity	Develop and conduct one environmental community service learning activity throughout the term in pairs– submit materials or other evidence (summary, video diary, website, blog etc) and give oral presentation	30
Research report	Select 3 of 6 topics from the course (i.e. first from Topic 1 & 2, second from Topic 3 & 4, and third from Topic 5 & 6) and prepare formal written reports synthesizing your research findings (2000 words including introduction, problem statement, current knowledge, applications +refs)	50
Total		100%

Submitting Assignments

All written assignments will be posted and should be handed in through Blackboard. Assignments are due at midnight on the due date shown.

Late Assignments

The instructor's policy for late assignments includes a 10% penalty per day after the deadline. Assignments will not be accepted after 3 late days unless documented by a medical or bereavement note.

Attendance and Participation Expectations

The class is based in large part on active learning and class discussions. Therefore, it is expected that students will attend all classes and come prepared for each class by completing the reading or other material in advance. There is a mark assigned to each student based on the student's attendance, preparation, participation and level of engagement in class and group activities. This mark is assigned by each instructor after completion of each topic.

Criteria That Must Be Met to Pass

A final grade of 50% or higher is required to pass the course. Because this is a research and writing-intensive course, there is no final exam. There will be marks assigned as follows with additional details provided in the first class

Course schedule



Student feedback

The instructors welcome informal student feedback throughout the course. Formal opportunities

Date	Topical Theme	Instructor	Due date
Jan. 6	Introduction – What does an environmental biologist do? Research tools and databases	C. Morrissey/ H.Baulch/ Biology librarian	
Jan. 8	TOPIC 1: Invasive species in aquatic ecosystems	H.Baulch	
Jan. 13,15	Topic 1 continued	H.Baulch	
Jan. 20,22	TOPIC 2: Climate change and lakes	H.Baulch	
Jan. 27, 29	Topic 2 continued	H.Baulch	Report 1 due January 30
Feb. 3, 5	TOPIC 3: Multiple stressors impacting urban river ecosystems	C. Morrissey	
Feb. 10, 12	Topic 3 continued	C. Morrissey	
Feb. 16-20	<i>NO CLASSES-Midterm Break</i>	C. Morrissey	
Feb. 24, 26	TOPIC 4: Pesticides and Biodiversity loss	C. Morrissey	
Mar. 3, 5	Topic 4 continued	C. Morrissey	Report 2 due March 6
Mar. 10, 12	TOPIC 5: Climate change and Canada's boreal forest	J. Johnstone	
Mar. 17, 19	Topic 5 continued	J. Johnstone	
Mar. 24, 26	TOPIC 6: Fire and woodland caribou	J. Johnstone	
Mar.31, Apr 2	Topic 6 continued	J. Johnstone	Report 3 due April 3
Date TBD	Final presentation symposium - Community Service learning project	C. Morrissey/ J. Johnstone	Community service project due

for recording student feedback of the course, material and instructors will be provided at the end of the course.

Academic Honesty

Each student in this course is expected to abide by the University of Saskatchewan Guidelines for Academic Honesty (see <http://www.usask.ca/honesty/>). Any written work submitted by a student in this course for academic credit will be the student's own work, unless it is submitted as a group project report. Collaboration is allowed on group project reports, but documentation of individual students' roles and contributions to the project may be required. Students are encouraged to work together and to discuss information and concepts covered in the course with other students.



The College of Arts & Science and the University of Saskatchewan have a zero-tolerance policy regarding plagiarism and other forms of academic dishonesty and are committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Student Conduct & Appeals section of the University Secretary Website and avoid any behavior that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

All students should read and be familiar with the Regulations on Academic Student Misconduct (<http://www.usask.ca/secretariat/student-conduct-appeals/StudentAcademicMisconduct.pdf>) as well as the Standard of Student Conduct in Non-Academic Matters and Procedures for Resolution of Complaints and Appeals (<http://www.usask.ca/secretariat/student-conduct-appeals/StudentNon-AcademicMisconduct.pdf>)

For more information on what academic integrity means for students see the Student Conduct & Appeals section of the University Secretary Website at: <http://www.usask.ca/secretariat/student-conduct-appeals/forms/IntegrityDefined.pdf>

Accommodations for students with disabilities

Instructors are open and available to discuss appropriate academic accommodations that may be required for students with disabilities. Requests for academic accommodations should be made during the first three weeks of the semester, except for unusual circumstances, so arrangements can be made. Students are encouraged to register with Student Disability Services to verify their eligibility for appropriate accommodations. If you would like more information about the services please contact Disability Services for Students, University of Saskatchewan at 966-7273 or check out the website at www.students.usask.ca/disability/

Writing help

Centre for Writing Help at the University of Saskatchewan <http://www.usask.ca/ulc/?q=node/9> offers services to assist students enhance their writing proficiency, style, and effectiveness. All students are encouraged to make use of available resources and services.

University of Saskatchewan Grading System (for undergraduate courses)

Exceptional (90-100) A superior performance with consistent evidence of

- a comprehensive, incisive grasp of the subject matter;



- an ability to make insightful critical evaluation of the material given;
- an exceptional capacity for original, creative and/or logical thinking;
- an excellent ability to organize, to analyze, to synthesize, to integrate ideas, and to express thoughts fluently.

Excellent (80-90) An excellent performance with strong evidence of

- a comprehensive grasp of the subject matter;
- an ability to make sound critical evaluation of the material given;
- a very good capacity for original, creative and/or logical thinking;
- an excellent ability to organize, to analyze, to synthesize, to integrate ideas, and to express thoughts fluently.

Good (70-79) A good performance with evidence of

- a substantial knowledge of the subject matter;
- a good understanding of the relevant issues and a good familiarity with the relevant literature and techniques;
- some capacity for original, creative and/or logical thinking;
- a good ability to organize, to analyze and to examine the subject material in a critical and constructive manner.

Satisfactory (60-69) A generally satisfactory and intellectually adequate performance with evidence of

- an acceptable basic grasp of the subject material;
- a fair understanding of the relevant issues;
- a general familiarity with the relevant literature and techniques;
- an ability to develop solutions to moderately difficult problems related to the subject material;
- a moderate ability to examine the material in a critical and analytical manner.

Minimal Pass (50-59) A barely acceptable performance with evidence of

- a familiarity with the subject material;
- some evidence that analytical skills have been developed;
- some understanding of relevant issues;
- some familiarity with the relevant literature and techniques;



- attempts to solve moderately difficult problems related to the subject material and to examine the material in a critical and analytical manner which are only partially successful.

Failure <50 An unacceptable performance



BIOL 410 Community Service Learning Project Guidelines for semester project

The mission of the BIOL 410 community service learning project is to integrate research and knowledge from your Environmental Biology education with the goal to gain practical skills, experience and to benefit society as “environmentally aware” stewards for your community.

Community Service Learning (CSL) is an academic form of experiential learning where students contribute to their community and their own learning by participating in professor-approved community service activities related to the learning objectives of this course and then produce meaningful products. Through this exercise, you will have first-hand opportunity to apply your training in Environmental Biology to the real world. In many ways, students, professors and the community can each benefit – students learn through discovery and apply theory to real-life situations, they build partnerships and contacts outside the classroom, and transfer knowledge to meet the needs of partner organizations.

Service learning activities related to Environmental Biology can include but are not limited to:

- Designing a comprehensive website or informational webpages in a relevant subject area
- Hosting an information workshop or public demonstration
- Preparing an interpretive poster display or information pamphlet/document for a non-profit organization, park or reserve
- Creation and/or dissemination of educational programming and materials
- Designing a citizen science project for a local environmental monitoring scheme/program
- Conducting a field activity for community group or school group or naturalist society
- Conducting a public awareness campaign

While these are only suggestions and are merely general ideas, you are advised to discuss the specifics of your selected activity in consultation with the partner organization and with one of your instructors BEFORE you start working on it. Your instructors can assist you to find a partner organization and advisor but you will be responsible for making contact and arranging your own work schedule to fit in with the partner organization.

Timelines:

You should have identified the partner organization and project idea by the end of January. We will have a check up on work progress by the end of February. All work needs to be completed by the end of March. You will be evaluated on the basis of the evidence you produce in support of the work (summary report, video diary, website, blog etc) and your oral presentation during the symposium at the end of the term. A detailed marking rubric is attached below.

If you are not convinced this type of activity is a good use of your time- we suggest reviewing the following material...<http://www.communityservicelearning.ca/en/>



BIOL 410 Evaluation Rubric: Community Service Learning Project

	Poor (A generally weak performance; some evidence of)	Satisfactory	Good	Very good-excellent	Exceptional (superior performance)	Mark allocation
Demonstrated knowledge of research topic	Lacking sufficient understanding of subject matter, relevant issues, use of literature	Basic grasp of the subject matter, relevant issues	Substantial knowledge of subject matter, relevant issues	Comprehensive grasp of subject matter, relevant issues	Comprehensive, incisive grasp of subject matter; an exceptional ability to synthesize.	25
Analytical/Technical	Some attempt to research the issue and synthesize information but with significant errors and/or poorly referenced	A satisfactory attempt to research the issue and synthesize information with few errors; limited references	A good ability to analyze and synthesize the information either before or after the activity, some use of appropriate visuals and supporting information such as tables, figures etc	A very good to excellent ability to analyze and synthesize information; very good use of visuals and supporting information such as tables, figures etc	An exceptional ability to analyze and synthesize information in a novel and interesting manner; perfect referencing and use of supporting information using acceptable format.	20
Creativity & insightfulness of issue	Some ability to examine the material in a creative manner; reports rather than interprets; no original thought or expression	Satisfactory ability to address the issue; limited capacity for original and creative thinking and approach	Good capacity for logical and creative thinking; is able to interpret beyond simply reporting	A very good to excellent ability for original and creative thinking and expression	An exceptional capacity for original, creative and logical thinking and expression	20
Evidence of community engagement	Limited ability to make linkages in personal and professional contexts	A satisfactory ability to make linkages in personal and professional contexts	A good ability to organize time and interact in personal and professional context	Demonstrating strong commitment to engage community; evidence of time invested is high	An exceptional ability to organize time and respond to the community needs; makes meaningful impact that is lasting in a personal and professional context	15
Quality of in class presentation	Presents a weakly organized, or lacking background information; some problems with use of voice and visuals; some issues with appropriate format and style	Acceptable format and style; some issues in organization, sufficient use of voice and visuals	Presents a relatively clear, organized, succinct presentation; good communication skills	A very good to excellent ability to organize, analyze, synthesize, integrate ideas, and express thoughts fluently through acceptable format; poses useful questions in relation to research to stimulate class.	An exceptional ability to organize, to integrate ideas, to analyze and to express thoughts fluently; poses probing and thoughtful questions in relation to research that stimulates the class	20
	<50-59	60-69	70-79	80-89	90-100	