January 2014

BIOL 410.3 – CURRENT PERSPECTIVES IN ENVIRONMENTAL BIOLOGY
2013-14 Term 2

I. General Information

Instructors:

Dr. Christy Morrissey (Course coordinator)
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Dr. Vladimir Kricsfalusy
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Course prerequisites: BIOL 228 (Introduction to Ecology and Ecosystems)
BIOL 301 (Critical Issues in Biology)
and Permission of the Department

Schedule: Tues/Thurs 8:30 – 9:50 am, rm. 124 Biology

II. Course Calendar Description

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.

III. 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.

IV. Course Aims and Objectives

Aims

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.

Specific Learning Objectives

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.

V. 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 outreach 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 PAWS.

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.

VI. Evaluation

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. 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:

Activity	Description	Mark
Participation and performance	Preparation, participation and engagement in class group activities and discussions	20
Outreach activity	Develop and conduct one environmental outreach activity throughout the term in pairs– submit materials or other evidence (summary, video diary, website, blog etc) and give oral presentation (last class)	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)	50
Total		**100%**

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.

VII. Course Schedule

Week	Topical Theme	Instructor	Due date
Jan.7	Introduction – What does an environmental biologist do?	C. Morrissey/ V. Kricsfalusy	
Jan. 7, 9	**TOPIC 1**: Urban biodiversity: planning and restoration of natural habitats in human-altered landscapes	V. Kricsfalusy	
Jan. 14,16	Topic 1 continued	V. Kricsfalusy	
Jan. 21,23	**TOPIC 2:** Conservation of species at risk at different scales: issues and practicalities	V. Kricsfalusy	
Jan. 28, 30	Topic 2 continued	V. Kricsfalusy	Report 1 due January 31
Feb. 4, 6	**TOPIC 3:** Role of animal behaviour in conservation biology	C. Morrissey	
Feb. 11, 13	Topic 3 continued	C. Morrissey	
Feb. 18, 20	*NO CLASSES-Midterm Break*		
Feb. 25, 26	**TOPIC 4:** Multiple stressors impacting urban river ecosystems	C. Morrissey	
Mar. 4, 6	Topic 4 continued	C. Morrissey	Report 2 due March 7
Mar. 11, 13	**TOPIC 5**: Climate change effects on lake ecosystems	R. North	
Mar. 18, 20	Topic 5 continued	R. North	
Mar. 25, 27	**TOPIC 6:** Identifying drivers of animal population change: species- versus ecosystem-focused approaches	N. Michel	
Apr. 1, 3	Topic 6 continued	N. Michel	Report 3 due April 4
Apr. 8	Final oral presentations - Outreach activity	C. Morrissey/ V. Kricsfalusy	Outreach project due

VIII. 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 is 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 has a zero-tolerance policy regarding plagiarism and other forms of academic dishonesty. Professors are required by College policy to report all forms of academic

dishonesty to the Dean's office. Any plagiarism of written material detected in this course will cause all students who are authors on the written work to be referred to the Dean's office. Formal penalties for academic dishonesty range from receiving zero marks on the assignment, to failure of the course, to University-level disciplinary action that may include expulsion.

IX. . 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 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/

X. 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.