Biology 9441L: Managing Risks to Ecosystems: Boreal Ecosystems

Instructor:
Dr. Irena Creed
Department of Biology
Email: icreed@uwo.ca
Office: BGS 3023 (office hours by email appointment)
Phone: 519-661-2111 ext. 84265

Outline:
This course will examine the management of ecosystem services in the Boreal zone of Canada. Through real world collaborations with academics and government scientists across the country, this course will provide students experience working at the interface between science and management. Under the mentorship with their collaborators, students will author manuscripts for a special issue of a peer-reviewed journal which will comprise the results of their work conducting a scenario analysis of the Boreal zone. As well, through training sessions with government scientists and academics, students will also learn about the tools that are used to analyze environmental policy in order to conduct a risk management analysis in the Boreal.

Format:
This course consists of self-directed research where teams of students and mentors conduct a scenario analysis for the Boreal zone of Canada. The work involves independent research conducted by students on the drivers of environmental change that will impact the Boreal over the next 30 years (i.e. atmospheric change, governance and geopolitics, demographics and societal values, innovation and infrastructure, demand for provisioning ecosystem services and demand for non-provisioning ecosystem services). They will examine both current and past trends of these drivers and create plausible, divergent future scenarios for how these drivers might impact the Boreal. Their work will contribute to a driver paper for a special issue in an academic journal. These driver papers will inform the content of a capstone manuscript which will create four divergent future histories of what the Boreal might be like 30 years from now.

With information from the scenario analysis, students will learn how to conduct an ISO 31000 Risk Management Analysis. This analysis the students will characterize the system of management measures for certain Natural Resources Canada policy objectives that are currently in place to prevent or mitigate the negative impacts on the ecosystem services ecosystem (clean and plentiful freshwater, carbon storage, water and nutrient cycling, biodiversity, etc.) provided by the Boreal. Students will also learn how for part of this analysis, the ISO 31010 Bowtie Analysis is used to highlight the gaps in management by providing a visual synthesis of the key drivers of the problem and its solutions, as well as the gaps and redundancies that exist in the management system.

Course Objectives:
Upon completion of the course, students will be able to:

1) Conduct all research aspects of a scenario analysis: defining the drivers, providing the scope of each driver, conducting research on the past trends and current status of scenario drivers, creating divergent driver scenarios, selecting the axes of change that will define the boundaries of the four divergent capstone scenarios.

2) Understand all aspects of an ISO 31000 Risk Management analysis using the ISO 31010 Bowtie Analysis: characterizing the system of management measures, creating a Bowtie diagram, writing a policy brief that includes recommendations arising from their analyses.
Classes and Tutorials:
There will be no formal class times for this course, however, students will be expected to participate in research meetings with other students and mentors occurring through conference calls and in-person project workshops. Students are encouraged to contact the instructor as the course progresses should they have any questions or any roadblocks arise.

Evaluation:

Participation (20%) – students will participate in four training workshops with the entire Boreal 2050 team

Presentations (20%) – students will do three presentations, reporting to the entire Boreal 2050 team on the progress of their research

Manuscript (60%) – students will be evaluated on their contribution of authorship on a final manuscript which will be submitted for publication in a special issue of a peer-reviewed journal

Scholastic Offences:
Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf

Plagiarism is the submission of the work of someone else without giving credit to the author, and presenting the work as your own. When the ideas or words of others are used, as they necessarily will be, proper citation and reference to their source must be given. Plagiarism is unacceptable and is considered a major offence by the university. If you are unsure what plagiarizing is please familiarize yourself with the University guidelines (see website above).

Support Services:
Students who would like to improve their academic skills should visit UWO Student Services (studentservices.uwo.ca) where they can access many excellent resources on learning skills, planning, effective writing, and dealing with personal challenges. Consultation with the Instructor is also possible.
Students who are in emotional/mental distress should refer to Mental Health@Western http://www.uwo.ca/uvcom/mentalhealth/ for a complete list of options about how to obtain help.

Special Accommodation:
Students requiring special accommodation to fulfill any element of this course on the basis of a disability should contact Student Development Services (www.sdc.uwo.ca/sss/), and the course instructor, as early as possible so that arrangements can be made.

Late Assignments:
All late assignments will be subject to a late penalty of 10% per day. Assignments must be submitted to the instructor on the day they are due to be considered on time. In order to ensure fairness and consistency for all students, academic accommodation shall be granted only in those cases where there is documentation indicating that the student was seriously affected by illness and could not reasonably be expected to meet his/her academic responsibilities. Accommodation on medical grounds can only be granted with the support of a UWO Student Medical Certificate (available at studentservices.uwo.ca; see UWO Policy on Accommodation for Medical Illness at same site). Please note that mental health
concerns are valid medical reasons. Other acceptable reasons for not meeting academic obligations include car accidents, or a death in the immediate family etc., for which acceptable documentation is provided (police accident report, funeral notice). Notify the course Instructor about late/missed assignments. Accommodation will not be made for holidays, changes to travel plans, weather (unless as part of a university-wide action), or other non-critical circumstances.