Division of Applied Science & Management
School of Science
Winter 2016

COURSE OUTLINE

ENVS 101

AN INTRODUCTION TO ENVIRONMENTAL SCIENCE

45 **HOURS**
3 **CREDITS**

PREPARED BY: Meagan Grabowski, Instructor DATE: 4 January 2016

APPROVED BY: Margaret Dumkee DATE: January 18, 2016


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Division of Applied Science & Management
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ENVS 101
Winter 2016

COURSE TITLE

INSTRUCTOR: Meagan Grabowski, MSc

OFFICE HOURS: Tuesday 12-1pm or by appointment

OFFICE LOCATION: A2515

CLASSROOM: A2103 and A2202 (lab)

E-MAIL: mgrabowski@yukoncollege.yk.ca

TIME: Tuesday & Thursday 10:30-12
Monday 1-4

TELEPHONE: 668-8776

DATES: 7 Jan – 12 April, 2016

COURSE DESCRIPTION

Environmental Science 101 is a companion course to ENVS 100; it is designed for students who are not pursuing a science program but who wish to learn more about the effects of human activities on the environment. Students will be able to apply the basic concepts that were presented in ENVS 100 to investigate a variety of environmental problems at both the local and global level.

There will be four major units in this course. Firstly, energy supply options and the relative impacts of these options on the environment. With changing global energy economies, considering options for reducing dependence on certain energy types in order to lessen additions to global climate feedbacks is an increasingly integral challenge to northern lifestyles. Secondly, an introduction to basic concepts of organic chemistry and how contaminants such as DDT and PCB's have impacted northern ecosystems. Thirdly, the importance of the water cycle and groundwater, as well as problems of water pollution from domestic agriculture and industrial sources. And lastly, the practical aspects of environmental protection and an introduction to conservation biology and environmental regulation.

PREREQUISITES

ENVS 100 or permission of the instructor.

RELATED COURSE REQUIREMENTS

Attendance and Participation

Regular attendance at both lectures and labs is required. Some of the course learning outcomes will be achieved through experimental learning so attendance and participation is critical. A student may be dismissed from a course if more than 10% of the scheduled contact hours are missed in any one course. Dismissal from a course may result in the loss of full-time status and loss of scholarship funding.

EQUIVALENCY OR TRANSFERABILITY

UBC Geog 1st year (3) Not for credit in Science.
SFU Geog 1sectna (3)
UVIC Es 100L (1.5)
UNBC Envs 1xx (3); YUKO ENVS 100 & 101 = UNBC GEOG 100 (3) & ENVS 1xx (3)
UR Geog 200 (3)
UAG Nsci Elec. (n) (3)
UAS Physical Geog Elec. (3)

For more information about transferability contact the School of Science office.

LEARNING OUTCOMES

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

- Use library resources to research and critically assess an environmental topic
- Write a basic scientific report to describe the outcome of a field or laboratory study using a standard format of Introduction, Methods, Results and Discussion
- Name simple organic molecules, describe the combustion reaction of alkanes, recognize functional groups and isomers, and understand the structural aspects of PCB's that influence their toxicity
- Develop a simple cost-benefit analysis of energy-conservation related proposal including a matrix that lists relevant externalities
- Summarize the range of issues surrounding an environmental question including ethical perspectives, questions of sustainability and underlying biological and chemical factors.

COURSE FORMAT:

The course is delivered using two 1.5 hour lectures per week as well as a weekly three-hour lab or tutorial. Some lectures will include short videos and class discussion.

ASSESSMENTS
Students are expected to attend both lectures and the scheduled lab or tutorial activities.

Attendance & Participation
A portion of the final grade is based on attendance and participation in class. Participation is graded by way of class participation quizzes.

Assignments
There will be one major term paper assigned during the term and lab activity assignments.

Tests
Rather than have a single mid-term examination, we will have a short test at the end of three of the modules.

EVALUATION

Class participation quizzes	6%
Term paper	15%
Quizzes (3 modules)	24%
Lab activities	25%
Final Exam	30%
Total	100%

Note: Students must obtain a passing grade in the lab portion of the course to pass the overall course.

REQUIRED TEXTBOOKS AND MATERIALS

- Freedman, Bill. Environmental Science: A Canadian Perspective – 5th Edition 2010

ACADEMIC AND STUDENT CONDUCT

Information on academic standing and student rights and responsibilities can be found in the Academic Regulations:
http://www.yukoncollege.yk.ca//downloads/Yukon_College_Academic_Regulations_and_Procedures_-_August_2013_final_v1.pdf

PLAGIARISM

Plagiarism is a serious academic offence. Plagiarism occurs when students present the words of someone else as their own. Plagiarism can be the deliberate use of a whole piece of another person's writing, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material. Whenever the words, research or ideas of others are directly quoted or paraphrased, they must be documented according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Resubmitting a paper which has previously received credit is also considered plagiarism. Students who plagiarize material for assignments will receive a mark of zero (F) on the assignment and may fail the course. Plagiarism may also result in dismissal from a program of study or the College.

YUKON FIRST NATIONS CORE COMPETENCY

Yukon College recognizes that a greater understanding and awareness of Yukon First Nations history, culture and journey towards self-determination will help to build positive relationships among all Yukon citizens. As a result, to graduate from ANY Yukon College program, you will be required to achieve core competency in knowledge of Yukon First Nations. For details, please see www.yukoncollege.yk.ca/yfnccr.

ACADEMIC ACCOMMODATION

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in section 8.0 of the Yukon College Academic Regulations (available on the Yukon College website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, he/she should contact the Learning Assistance Centre (LAC) at (867) 668-8785 or lassist@yukoncollege.yk.ca.

TOPIC OUTLINE

ENVS 101 - Lecture Topics & Readings[1]

Note: Draft Schedule – updated 15 January 2016

Date	Lect	Topic
Jan. 7	1	Term overview. Energy review.
Module I - Energy		
Jan. 12	2	Overview of systems analysis and feedback loops in natural systems; Governance and energy policy primer.
Jan. 14	3	Introduction to externalities and cost-benefit analyses **Readings:** Chap 13 – Energy Tutorial I due
Jan. 19	4	What is energy? Units of measurement. Overview of renewable and non-renewable energy sources **Readings**: Chap 14
Jan. 21	5	Dr. JP Pinard: Renewables in the Yukon
Jan. 26	6	Nuclear, Hydraulic Fracturing
Jan. 28	7	Carbon capture and sequestration
Module II - Organic Chemistry		
Feb. 2	8	Dr. S Gilbert: Chemistry review: ionic and covalent bonds. Why such diversity of carbon compounds? Introduction to alkanes, alkenes, alkynes, cycloalkanes
Feb. 4	9	Dr. S Gilbert: Combustion of alkanes & balancing equations
Feb. 9	10	Dr. S Gilbert: Isomers
Feb. 11	11	Benzene, functional groups
Feb. 16	12	PCB's - structure and toxicity; chiral compounds and stereochemistry
Feb. 18	13	Devon Yacura, MSc student: Contaminants in northern food chains (Whitehorse lagoon research) + Chemistry wrap up
Feb. 23		** Reading Break **
Feb. 25		

[1] Readings are from the course text, *Environmental Science: A Canadian Perspective*. 5th Ed

Module III - Water		
March 1	14	Chemical properties of water
March 3	15	Water pollution overview
March 8	16	Groundwater resources and threats
March 10	17	Surface water resources and eutrophication **Readings:** Chapter 20
March 15	18	Eutrophication continued
Module IV – Environmental Regulation		
March 17	19	Regulating Environmental Use **Readings:** Chapter 27
March 22	20	Tools to encourage compliance with environmental regulations
March 24	21	Tools…continued
March 29	22	Stefan Gronsdahl: Regulation in Yukon and site remediation
March 31	23	Island biogeography and preserving biodiversity **Readings:** Chapter 26
April 5	24	Guest lecture (TBD): Parks as conservation tools
April 7	25	Sustainability: do we need more regulations? / Intro to Ecological Economics
April 12	26	Final Summary Lecture

Schedule of Lab Activities

	Topic
Jan. 11	Physics and energy review. Energy Tutorial I
Jan. 18	Media coverage of academic articles /Library tour: Research tools to support term paper research
Jan. 25	Energy Tutorial II – cost-benefit analysis
Feb. 1	Group Presentations on Yukon Energy Supply Options *Quiz: Energy* - 45 minutes
Feb. 8	Dr. S Gilbert: Heat Loss of Winter Footwear Energy
Feb. 15	Organic Chemistry Tutorial I
Feb. 22	Organic Chemistry Tutorial II
Feb. 29	Reading Week break
March 7	Organic Chemistry Tutorial III + Solubility demonstration in Chemistry Lab

March 14	*Quiz: Organic Chemistry* - 60 minutes - Chemical Fact Sheet due today + cost-benefit analysis 2
March 21	Field trip Water Quality Lab (tentative – Catherine Mallet, YRC)
April 4	*Quiz: Water* (45 minutes) Island biogeography workshop
April 11	Individual presentations on term paper or Group Action Projects