APPLIED SCIENCE & MANAGEMENT DIVISION
ENVS 100
School of Science
Fall, 2019

COURSE OUTLINE

ENVS 100

AN INTRODUCTION TO ENVIRONMENTAL SCIENCE I

45 HOURS
3 CREDITS

PREPARED BY: _____ DATE: _____
Scott Gilbert, Instructor
APPROVED BY: _____ DATE: _____
Margaret Dumkee, Dean

APPROVED BY ACADEMIC COUNCIL: _____

RENEWED BY ACADEMIC COUNCIL: _____

The Course Outline Template is approved by the Academic Council on June 20, 2018

APPLIED SCIENCE & MANAGEMENT DIVISION
ENVS 100
School of Science
Fall, 2019

AN INTRODUCTION TO ENVIRONMENTAL SCIENCE I

INSTRUCTOR: Scott Gilbert, B.Sc., Ph.D.
Chemistry lab instructor **TBA**

OFFICE LOCATION: A2515

E-MAIL: sgilbert@yukoncollege.yk.ca

TELEPHONE: (867) 668-8776

OFFICE HOURS: Mon & Wed 9:30-10:30 am
or by appointment

CLASSROOM: Lecture - TBA
Lab - TBA

TIME: Lecture: Mon & Wed, 10:30am-12pm
Lab: Thursday, 2:30-5:30pm

DATES: Sept 4 - Dec 20, 2019

COURSE DESCRIPTION

Environmental Science 100 is specifically designed for students who are not pursuing a science program but who wish to learn more about the physical and biological processes that shape our environment. Our planet, and its living and non-living parts, makes up the biosphere, which itself is a complex web of interactions. We investigate these interrelationships by studying the underlying processes in terms of their biology and chemistry.

The course has two goals. First to explain some of the basic concepts in ecology and chemistry and secondly to show how these concepts can help understand four or five of the critical problems facing our world: the size and growth rate of the world's population, atmospheric problems (green house effect, thinning of the ozone layer and acid precipitation) and sustainability of the world's agricultural and forestry industry.

PREREQUISITES

Admission to the School of Liberal Arts or School of Science.

EQUIVALENCY/TRANSFERABILITY:

UBC	Geog (3)	**SFU**	BISC 1xx (3)
UAF	Nsci Elec (n) (3)	**UAS**	Physical Geog Elec (3)
UR	Geog 100L (3) or Esci 200L (Educ. Students)		
UNBC	Envs 1xx (3) or with ENVS 101 = Envs 100 (3) & Envs 1xx (3)		
UVIC	Es 100L (1.5)		

See the website http://bctransferguide.ca/ for a more complete list of transfers within BC.

LEARNING OUTCOMES
Students that successfully complete this course will:

- Understand the basic processes and interrelationships that govern our biosphere.
- Be able to research environmental topics and prepare verbal and written arguments.
- Understand the range of environmental problems confronting the world, and be aware of potential solutions at a variety of levels (as individuals, locally and globally.)

DELIVERY METHODS/FORMAT
Lectures are classroom based and lab period activities include at least one field biology exercise in the forest on campus, chemistry lab experiments and workshops and tutorials.

COURSE FORMAT
Lectures: Three hours per week (2 classes of 1.5 hours)
Labs: Three hours per week - a total of seven or eight three-hour activities during the term.

COURSE REQUIREMENTS

ASSESSMENTS

Attendance
Students are expected to attend both lectures and the scheduled activities (including field activities). Several of the lab exercises involve collecting data or making observations and this would make it difficult or impossible for students who miss the lab to complete the lab assignment. There is a strong correlation between regular attendance and academic performance.

ASSIGNMENTS & TESTS
There will be several short class quizzes and take-home assignments and some field/lab activities may require written assignments. Rather than a single mid-term examination we will have two somewhat shorter quizzes. Students must pass the field/lab portion of the course if they wish to receive a passing grade for the overall course. The final exam is scheduled for Monday Dec 16 from 9:00-noon; it will be comprehensive and cover all topics taken up during the term.

Book review	10
Class participation/assignments	5
Field/lab activities	25
Quiz (2 @ 15%)	30
Final examination	30
Total	**100**

REQUIRED TEXTBOOKS/MATERIALS

Freedman, Bill 2018. *Environmental Science: A Canadian Perspective*. 6th Edition The text is available as a free download in various formats under a Creative Commons licence. See: https://digitaleditions.library.dal.ca/environmentalscience/ A course manual will be distributed during the first lecture and additional readings will be available on the course web site.

ACADEMIC AND STUDENT CONDUCT

Information on academic standing and student rights and responsibilities can be found in the current Academic Regulations that are posted on the Student Services/ Admissions & Registration web page.

PLAGIARISM

Plagiarism is a serious academic offence. Plagiarism occurs when a student submits work for credit that includes the words, ideas, or data of others, without citing the source from which the material is taken. Plagiarism can be the deliberate use of a whole piece of work, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Students may use sources which are public domain or licensed under Creative Commons; however, academic documentation standards must still be followed. Except with explicit permission of the instructor, resubmitting work 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) 456-8629 or lac@yukoncollege.yk.ca.

Syllabus

ENVS 100 -2019 Lecture Outline* - June 24 *draft*

Date	Topic	Readings
Sept. 4	Introduction: environmental science, ecology, sustainable development, ecological footprint, I=PAT, worldviews.	Chapter 1
Sept. 9	Scientific method and hypothesis testing. Succession	Chapter 2. Dearden & Mitchell 2016 Chapter 3 on Succession
Sept. 11	Physical world: hydrosphere & atmosphere. Introduction to key ecological concepts	Chapter 4
Sept. 16-18	Energy flow through ecosystems: ecosystem structure, photosynthesis, consumers, decomposers. Nutrient flows.	Chapter 4 cont'd + pp. 78-81,
Sept. 23-25	Questions of abundance: Animal populations – density, mortality and birth rates. Human populations – historical view of Malthus	pp. 15-18, 39-52, 120-
Sept 30 - Oct. 2	Human populations - population growth and questions of sustainability.	Chapter 2, pp 39-55
Oct. 7	Chemistry: What is chemistry? Basic def'ns – matter and its physical and chemical properties, elements and compounds, mixtures. Simple model of atomic structure – nucleus, protons, neutrons, electrons, atomic number, periodic table, isotopes,	
Oct. 9	Chemistry: orbitals and electron configuration, ions, octet rule	
Oct. 14	**Thanksgiving holiday** - Lecture moved to Wed Oct 16 which runs on a "Monday" schedule	
Oct 16	*Wednesday lecture – Chemistry: Balancing chemical formulae, law of conservation of mass, molecular mass, photosynthesis eq'n, mole, Avogadro's #r	
Oct. 21	Chemistry: Acid base reactions, proton donors and proton acceptors, pH, scientific notation, titration equivalence point, indicators, buffers	pp. 450-452
Oct 23	Intro to atmospheric chemistry problems – problems related to scale – local air pollution, global warming vs global climate change, greenhouse gases, radiatively active gases,	pp. 85-86 (carbon cycle), Chapter 17
Oct 28	Intro to air pollution – sources and species, gases and particulates, black carbon, LRTAP, primary and secondary pollutants, fugitive emissions, photochemical smog, ozone as a pollutant in the troposphere, loss of ozone in the	Chapter 16

	stratosphere, Montreal Protocol	
Oct 30	Case studies – Project Drawdown, policy choices, double dividends,	pp 419-422
Nov. 4	Last chem lecture	
Nov 6	Biological impacts of acid precipitation	pp 471-485
Nov 11	**Remembrance Day holiday** - Lecture moved to Thurs Nov 14 which runs on a "Monday" sched	
Nov. 13	Agriculture: historical survey of trends. Impacts of agriculture: nutrient cycles, deforestation, energy consumption	Chapter 24
Nov 14 **Thurs**	Agriculture continued	Chapter 24
Nov. 18	Agriculture continued	Chapter 24
Nov. 20	Survey of forestry practices - Carbon budgets and agricultural and forestry practices	Chapter 23
Nov. 25	Pesticides in agriculture and forestry: What are they? Why do we use them? What are the disadvantages?	Chapter 22
Nov 27	Alternatives to pesticides - Integrated Pest Management (IPM), bio control, changes in land culture practices	
Dec. 2	Contaminants in northern ecosystems	
Dec 4	Finish contaminants + course summary	

* Readings based on your text: Freedman 2018 - *Environmental Science: A Canadian Perspective*. 6th Ed

ENVS 100 – Lab Activity Schedule

Here is the schedule for our afternoon lab activities. You'll note that we cover a range of activities from field exercises to lab studies and tutorials. The common theme is that you MUST read over the background information and directions for each activity before class. Past experience shows that students who forget to prepare for the lab ahead of time, by doing the readings, get confused and frustrated. Take the time to prepare so you can get the most out of these activities.

Date	Activity
Sept. 5	Group A McIntyre Creek Vegetation field survey - meet in _____ Group B - Library Tour at 1:00 - Library Research Assignment due next Friday
Sept. 12	Group A Library Tour at 1:00 - Library Research Assignment due next Friday Group B McIntyre Creek Vegetation field survey - meet in _____
Sept. 19	Population growth – tutorial
Sept 26	Living with the neighbours: Soapberry bushes as a bear attractant on campus
Oct. 3	**Quiz I**
Oct. 10	Chemistry Lab 1 : Group A [*Meet at the Chemistry Lab]*
Oct. 17	Chemistry Lab 1: Group B [*Meet at the Chemistry Lab]*
Oct. 24	Chemistry Lab 2: Group A [*Meet at the Chemistry Lab]*
Oct 31	Chemistry Lab 2 : Group B [*Meet at the Chemistry Lab]*
Nov. 7	**Quiz II**
Nov 14	No lab – Thurs Nov 14 runs on a "Monday" schedule to make up for holiday
Nov 21	Tragedy of the Commons workshop
Nov 28	Karimlam Role Playing exercise
Dec. 5	Review session