REN R 463

BIOLOGICAL ADAPTATION TO NORTHERN ENVIRONMENTS

In Winter 2017, REN R 463, *Biological Adaptation to Northern Environments*, is being offered at Yukon College as part of the Northern Environmental and Conservation Sciences, B.Sc. Program. All students registered in REN R 463 must adhere to the requirements outlined in this course syllabus. University of Alberta students must also be aware of, and adhere to, the University's Code of Student Behaviour, referenced in the outline.

INSTRUCTOR:	DR. KATHRYN AITKEN Adjunct Professor, Dept. of Renewable Resources, U of Alberta, and Instructor/Coordinator, Northern Environmental and Conservation Sciences Program, Yukon College
OFFICE HOURS:	Tues. 1:00-2:00, Weds. 1:00-2:00 (or by appointment)
OFFICE LOCATION:	A2509
E-MAIL:	kaitken@yukoncollege.yk.ca
CLASS DAYS & TIMES:	Tuesdays and Thursdays, 10:30-12:00
CLASS LOCATION:	C1511

COURSE DESCRIPTION:

This course will provide an overview of the study of evolutionary processes, with a focus on examples from northern environments. Topics from evolutionary biology, such as natural selection and adaptation, will be applied to species living in boreal, arctic, and tundra environments. The course will cover the unique challenges faced by animals and plants in these environments, the ways in which they have adapted to deal with these conditions, and the potential effects of climate change on northern species.

STUDENT LEARNING OUTCOMES AND COMPETENCIES:

Upon successful completion of this course, students will:

- Understand the mechanisms of evolution, at a variety of scales.
- Be familiar with the application of concepts and models in evolutionary biology to conservation and management in northern environments.
- Be able to use evolutionary concepts such as natural selection and adaptation to explain the ways in which northern plants and animals may be affected by climate change.

COURSE FORMAT (3-0-0):

The course consists of two 1.5-hour lectures per week.

Audio or video recording of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as part of an approved accommodation plan. Recorded material is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the instructor.

COURSE PREREQUISITES AND/OR CO-REQUISITES:

Registration in University of Alberta/Yukon College B.Sc. in Environmental and Conservation Sciences degree program, and successful completion of U of A BIOL 208, YC BIOL 220 or an equivalent second-year ecology course, or permission of the instructor.

TEXTBOOKS/MATERIALS:

Not required but a good resource:
Futuyma, Douglas J. 2013. Evolution, 3rd ed. Sinauer Associates, Inc. ISBN 978-1-60535-115-5. Available in the YC Bookstore; also available as an ebook through Coursesmart (http://www.coursesmart.com/9781605351155), and as a loose-leaf edition through several online sources. There will be a copy on reserve in the YC library.

COURSE WEBSITE

Much of the material for the course will be available on the REN R 463 class site on Yukon College's Moodle system (yukoncollege.me). Lectures, announcements, additional reading, and other material will be available there for download or viewing. Students must ensure that they have a valid Yukon College student computing account. Information on setting up a YC computing account is available at:
http://www.yukoncollege.yk.ca/student_info/pages/computing_services.

UNIVERSITY OF ALBERTA ACADEMIC INTEGRITY AND CODE OF STUDENT BEHAVIOUR

Academic Integrity

"The University of Alberta is 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 Code of Student Behaviour (www.ualberta.ca/secretariat/appeals.htm) and avoid any behaviour which 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." (GFC 2003)

Code of Student Behaviour

"All students at the University of Alberta are subject to the Code of Student Behaviour, as outlined at: http://www.governance.ualberta.ca/en/CodesofConductandResidenceCommunityStandards/CodeofStudentBehaviour.aspx Please familiarize yourself with it and ensure that you do not participate in any inappropriate behavior as defined by the Code. Key components of the code include the following statements.

30.3.2(1) No Student shall submit the words, ideas, images or data of another person as the Student's own in any academic writing, essay, thesis, project, assignment, presentation or poster in a course or program of study.

30.3.2(2) c. No Student shall represent another's substantial editorial or compositional assistance on an assignment as the Student's own work."

PROFESSIONALISM AND CLASSROOM RULES OF ENGAGEMENT

Students are expected to attend all lectures, be engaged and courteous in all course activities, and to be on time for class. Please do not use cell phones during class. Laptops are permitted for note taking and in-class work; however, please do not use laptops in class for non-class-related activities.

COURSE REQUIREMENTS/EVALUATION:

Assignments

Students will write a short species account describing the adaptations of a species (or group of species) to life in northern environments, and present these results orally during class. Please discuss your topic ideas with the instructor. The written account will be due on Mar 24, and oral presentations will be conducted on Apr 4 and 6. Detailed instructions on length and format for the written report and oral presentation will be given in class.

Students must adhere to the citation style used by the Council of Science Editors in all written assignments (http://yukoncollege.yk.ca/library/pages/cite_your_sources).

Unless otherwise specified, assignments are due by 11:59 pm local time on the date that they are due. Late assignments will lose 5% of their mark per day that they are late.

Exams

There will be two midterm exams and one comprehensive final exam. The midterm exams will be scheduled during class time on Feb 2 and Mar 9. The final examination will be held at the end of term, during the scheduled Yukon College exam period.

Evaluation

The course grade will be determined as follows:

Assignment	Percent
Midterm exam #1 (Feb 2)	20%
Midterm exam #2 (Mar 9)	20%
Species account (due Mar 23)	15%
Oral presentation (Apr 4 and 6)	15%
Final exam (during exam period)	30%

Assignment of grades

The total numerical score will be converted to a grade on the following letter grading system:

Letter grade	Percent
A+	95-100
A	90-94
A-	85-89
B+	79-84
B	75-78
B-	71-74
C+	67-70
C	64-66
C-	55-63
D	50-54
F	0-49

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 with a documented disability or chronic condition. It is the student's responsibility to seek these accommodations. If a student has a disability or chronic condition and may need accommodation to fully participate in this class, he/she should contact the Learning Assistance Centre (LAC) at (867) 668-8785 or lassist@yukoncollege.yk.ca.

TOPICS:

- What is evolution?
- Patterns of evolution; adaptive radiation
- History of life on Earth
- Geography of evolution
- Genetic and phenotypic variation
- Natural selection
- Evolution of life histories
- Sexual selection
- Species and speciation
- Coevolution
- Plant adaptations in the north
- Animal adaptations in the north
- Climate change and adaptation