



UNIVERSITY OF  
ALBERTA



### ALES 391

#### CRITICAL THINKING AND ADVANCED COMMUNICATION IN SCIENCE

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<b>INSTRUCTOR:</b>	Dr. Kathryn Aitken Instructor, School of Science, Yukon College Adjunct Professor, Dept. of Renewable Resources, University of Alberta
<b>OFFICE HOURS:</b>	Mondays & Tuesdays 10:30-12:00, or by appointment
<b>OFFICE LOCATION:</b>	A2509
<b>TELEPHONE/E-MAIL:</b>	668-8866 / <a href="mailto:kaitken@yukoncollege.yk.ca">kaitken@yukoncollege.yk.ca</a>
<b>CLASS DAYS &amp; TIMES:</b>	Mondays, 1:00 – 4:00 pm
<b>CLASS LOCATION:</b>	A2202

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#### COURSE DESCRIPTION:

This course will focus on the skills necessary to successfully generate, communicate, and evaluate scientific information. Students will learn about various approaches to scientific inquiry, how to develop scientific questions and explanations, and practice reading and thinking critically about science. Developing competency in scientific writing will form a large component of the course. Students will learn the importance and purpose of scientific writing, compare and critique journals in their field of study, organize ideas in a structured way to prepare for writing, critically review and edit articles and manuscripts, and understand what is needed to prepare a well-written journal article, report or thesis.

#### STUDENT LEARNING OUTCOMES AND COMPETENCIES:

Upon successful completion of this course, students will:

- Understand the approaches to scientific inquiry, including inductive versus deductive reasoning, the scientific method, and hypothesis testing.
- Be able to construct clear, convincing scientific arguments and questions, and critically evaluate published scientific literature.
- Understand the fundamentals of writing a scientific paper, including appropriate grammar, word choice, and style.
- Critically compare key journals in their area of research or employment
- Review, edit and improve the fluency of scientific reports and articles

#### COURSE FORMAT (3-0-0):

The course consists of one 3-hour lecture per week.

## **COURSE PREREQUISITES AND/OR CO-REQUISITES:**

Registration in University of Alberta/Yukon College B.Sc. in Environmental and Conservation Sciences degree program.

## **REQUIRED TEXTBOOKS/MATERIALS:**

Greene, Laurence. 2010. Writing in the Life Sciences: A Critical Thinking Approach. Oxford University Press, Inc. ISBN-13: 978-0-19-517046-7. The textbook will be available for purchase in the Yukon College bookstore. A copy will also be available on reserve in the Yukon College library.

All students must have a valid Yukon College student computing account. Students should ensure that they have activated their computer lab account AND Moodle account prior to the start of classes. For more information, visit: <https://www.yukoncollege.yk.ca/student-life/technical-resources>.

## **COURSE WEBSITE**

PowerPoint presentations, computer lab exercises, homework assignments, and other resources will be available on the ALES 391 class site on Moodle (via [www.yukoncollege.me](http://www.yukoncollege.me)).

## **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 (online at [www.governance.ualberta.ca](http://www.governance.ualberta.ca)) 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.

### **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. While in computer labs, students are expected to refrain from using the computers to engage in non-class-related activities (e.g. Facebook, etc.).

## COURSE REQUIREMENTS/EVALUATION:

### Assignments

Over the course of the term, students will produce a research paper, review paper, or research proposal. This project will be completed in three main stages, together worth 70% of the total course grade (see below for breakdown of components and percentages). Students have the option of using a paper or proposal that they will be working on for another course (on approval of BOTH instructors), for their graduate work or employment, or for a funding opportunity. The three stages include:

- 1) Introduction to the paper or proposal. 20% of course grade. Due **Oct 7**.
- 2) Draft of full paper or proposal. 25% of course grade. Due **Oct 28**.
- 3) Final revised version of paper or proposal, including a cover letter detailing their responses to the reviewers' comments on their draft. 25% of course grade. Due **Dec. 2**.

In addition to the three assignments listed above, students will complete six exercises (5% each), which will focus on synthesizing, applying and refining skills discussed during lectures. These will include:

- 1) A written exercise discussing the rhetorical goals of the student's planned research/review paper or proposal. **Due Sept. 23**.
- 2) An abstract for the student's research/review paper or proposal. **Written in class on Nov. 4**.
- 3) Short (~10 min.) in-class presentation and facilitation of discussion on a news item on the results a scientific paper and the corresponding primary source for the item. Dates throughout term (student chooses).
- 4) Three peer reviews. **Due during class Oct. 16 (bring to class), Nov. 4 (completed in class), and Nov. 18 (bring to class)**.

Students must adhere to the citation style used by the Council of Science Editors (CSE) in all written assignments (several links with information on CSE style are available here: <http://guides.library.ualberta.ca/citing/cse>).

### Due Dates and Late Assignments

Unless otherwise specified, assignments are due by 11:59 pm Pacific time on the date that they are due. Late assignments will lose 5% of their mark per day that they are late, unless the student has obtained prior consent for an extension from the instructor. **Requests for extensions must be submitted to the instructor in writing, prior to the deadline at which the assignment is due.**

### Evaluation

The course grade will be determined as follows:

Assignment	Percent
Introduction for paper or proposal (Due Oct. 7)	20%
Draft of paper or proposal (Due Oct. 28)	25%
Final paper or proposal (Due Dec. 2)	25%
Short writing and peer review exercises (6 at 5% each)	30%

## Assignment of grades

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

Letter grade	U of A
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-	60-63
D	50-54
F	0-49

## ELECTRONIC DEVICES:

Use of electronic devices during examinations is restricted to those approved by the instructor (e.g. YC student computing lab computers). Use of cell phones and other personal electronic devices is prohibited during exams.

## RECORDING OF LECTURES, LABS, ETC.:

Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course 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 content author(s).

Please note that some classes in the B.Sc. Northern ENCS Program may be recorded using web conferencing software, and links to recordings may be posted on the class website.

## 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): [lac@yukoncollege.yk.ca](mailto:lac@yukoncollege.yk.ca).

## 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](http://www.yukoncollege.yk.ca/yfnccr).

**TOPICS:**

- Scientific literature – what it is, how to evaluate its credibility
- Reading and evaluating scientific papers
- Rhetorical goals for scientific writing
- Generating content (interpreting study data; synthesizing study outcomes; constructing and evaluating scientific arguments)
- Writing and revising (paragraph unity, topic sentences, coherence, and cohesion; sentence logic, clarity, style, and structure; grammar, word choice, punctuation)
- Abstracts

Full lecture and reading schedule will be distributed separately.