Research Methods I
BIOL 5013

Instructor: Dr. Allison Walker (she/her)   **Lecture:** Mondays, HSH016, 1-3:50PM
Office: BIO 435
Office hours: Wed 1-3pm
E-mail: allison.walker@acadiau.ca

Evaluation	Percentage	Date
Small assignments	30	Sept 16, 23 Oct 7, 21, 28 Nov 4
Policy brief	10	Nov 18
Research Proposal (draft)	25	Nov 25
Peer review	10	Dec 2
Presentation	10	Dec 2 & 4 (half the class on each day)
Class participation	10	Assessed weekly
Bio seminar attendance	5	These are held weekly at 4pm on Thursdays in HSH 202. Aim to attend 10 in your first year as a MSc student (5 per semester)

Part 1: Course Information

Course Description

This highly interactive course will provide ample opportunity for scientific writing skill development through workshops, lectures & guest lectures, weekly written exercises and longer written assignments: a policy brief communicating science to decision-makers and communities; your own MSc research proposal, and a thorough peer review of a classmate's research proposal.

Course Materials & Requirements

- The Scientist's Guide to Writing: How to Write More Easily and Effectively Throughout Your Scientific Career, 2nd ed. Stephen B. Heard (2022).
- Laptop

Course Structure

We will meet once weekly in a block format. Class sessions will include lectures, guest lectures, workshopping, discussions and peer review time, journalling, reflections and presentations.

Student Learning Outcomes

1. Understand how to communicate science effectively to scientific and non-scientific audiences.

2. Create and peer review a research proposal.

How to Meet the Learning Outcomes
1. Attend all class sessions. Be prepared to share your work in class workshops and to constructively critique peers' work. Participate! (10%)
2. Complete short written assignments (25% of course grade)
3. Prepare policy brief for non-scientific audience (policy makers) (10%)
4. Prepare a written MSc research proposal (20%), revise it after you receive your peer review comments & prepare a Response to Reviewer document; present your proposal to the class (10%)
5. Peer review a classmate's research proposal (10%)

Part 2: Topic Outline/Schedule

Lecture:

Sept 9 What Writing Is; Writing Behaviour
Sept 16 Style; Citations; ChatGPT
Sept 23 How to Read: Reference, Survey and
      Deep Reading of Scientific Literature
Oct 7   Structure & Content; Introduction
Oct 21 Methods section
Oct 28 Figures and Tables; Results section
Nov 4 How to write a Policy Brief *(Dr. Lara
      Cornejo Denman)*

Nov 18 Discussion section; Reference
      management
Nov 25 Peer Review and Revisions
Dec 2   Presentations of research proposal
Dec 4   Presentations of research proposal, *(This
      is a Wed but Acadia has made it a day
      for Monday classes to meet, due to the 3
      Mon holidays during Fall term)*

The instructor reserves the right to amend the above course plan with reasonable notice, and in consultation with the class.

Part 3: Assessment and Grading

Assessment will be a combination of small written assignments, as well as a policy brief, a draft MSc research proposal, a peer review of a classmate's draft research proposal, and presentation of your research proposal to the class.

Part 4: Course Policies

In this course, students are expected to submit work that reflects their own ideas and engagement with the readings as well as their writing ability. Engaging with the work of others is an important part of academic writing. All ideas and quotations borrowed from other sources must be carefully cited.

Students may not use generative AI, such as Chat GPT to help them complete assignments, unless use of such tools is part of the class assignment, in which case the AI tool must be cited. When an assignment is suspected of having been completed with the aid of one of these programs, the procedure for investigating academic integrity infractions will be followed (pages 40-41 of Acadia's Academic Calendar at https://registrar.acadiau.ca/AcademicCalendars.html).

The use of generative AI or paraphrasing software **without citation** counts as a form of plagiarism. In this course, the use of generative AI or paraphrasing software constitutes cheating, **unless it is being used in an assignment where the Instructor has specified it may be used, and in that case it must be cited**.

Part 5: University Policies

University policies are available in the Acadia University Academic Calendar or through the Registrar's website: https://registrar.acadiau.ca/welcometotheregistrarsoffice.html

Equity, Diversity and Inclusion

Acadia University is committed to becoming a culturally safe and anti-oppressive community. This can only be achieved where there are simultaneous efforts to eliminate all forms of discrimination and harassment from our campus community, including the elimination of all discrimination, harassment and violence based on one's identity, including but not limited to, gender, race, class, ethnicity, sexual orientation, disability, gender identity, gender expression, and Indigeneity. The policy against harassment and discrimination, and resources for students who believe they may have experienced, or witnessed, discrimination or harassment, are available here: https://www2.acadiau.ca/student-life/equity-judicial/equity.html

Last Drop Day

Last day to drop a course and receive a "W". Please check the Acadia University calendar dates, which are available here: https://registrar.acadiau.ca/AcademicCalendars.html

Inform Your Instructor of Accommodations

Acadia University is dedicated to improving access to campus life for all students with disabilities. While we attempt to ensure that all courses are accessible, we recognize that there are barriers that need to be addressed on an individual basis. Students who require accommodations to complete coursework or otherwise fully participate in class should contact Accessible Learning Services directly as soon as possible. https://www2.acadiau.ca/student-life/accessiblelearning.html

Commitment to Integrity

It is standard practice in Biology to check exams and assignments for cheating and plagiarism. Cheating in the class and/or lab, including plagiarism, will not be tolerated. Please read the appropriate sections of the current Acadia University Academic Calendar: https://registrar.acadiau.ca/AcademicCalendars.html

Information on copy-write and course content from Acadia University is available through the Vaughan Memorial Library: http://libguides.acadiau.ca/c.php?g=433650&p=5027078

The spoken and written course content (including the syllabus, handouts, lectures, presentations, labs, assignments, quizzes, tests, and exams) are the intellectual property of the instructor and may only be copied for personal use. Sharing these materials or uploading them where they may be accessed by others is a violation of copyright. If you wish to make audio, video, or photographic recordings in class, you must first obtain the consent of the instructor and of any other persons (e.g., guest speakers, other students) who may be captured in such recordings. In the case of personal use by students with disabilities, the instructor's consent shall not be unreasonably withheld.

Part 6: Program Learning Outcomes

Foundations of knowledge		Course specific examples	Proficiency 1-Introduction 2-Reinforcement 3-Proficient
Scientific method, inquiry and hypothesis testing	Find, understand and apply information from the literature; understand how to use the scientific method to examine problems from different perspectives	Literature review, proposal development, how to read broadly and deeply to improve scientific communication	3
Historical concepts and contributions by important figures	Explain foundational concepts in biology, Two-eyed Seeing, and ethical implications of scientific discoveries	Ethics of science communication to diverse audiences; media literacy	2

Biodiversity and ecology	Understand the genetic, taxonomic and ecosystem levels of biodiversity; focus on SW Nova including the Acadian Forest and Bay of Fundy ecosystems	Communicating biodiversity and ecology content in grant proposals, policy briefs, teaching materials and through media	2
Genetics and evolution	Understand the chemical basis of heredity, genetics and genomics; integrate concepts across disciplines to understand evolution	Communicating genetics and evolution content in grant proposals, policy briefs, teaching materials and through media	2
Human and environmental health	Understand form and function in health and disease within a One Health framework, integrating human and environmental health	Communicating health content in grant proposals, policy briefs, teaching materials and through media	2
Lab and field skills			
Experimental design	Gain experience in applying the scientific method	How to communicate experimental design to scientific and broad audiences	2
Safety	Work safely and productively in lab and field settings		
Lab skills	Gain experience with basic and advanced lab techniques and understand their application in research, health science and industry		
Field skills	Gain experience in basic and advanced field skills and understand their application in ecology, conservation biology and environmental change		
Data acquisition, analysis and interpretations	Collect data, present results both qualitatively and quantitatively, and interpret outcomes in light of the literature	How to interpret and communicate statistical results in scientific writing	2
Statistical analysis	Use R and or other programs to analyze biological data		
Professional skills			
Ethical practices	Demonstrate ethical conduct, apply principles of academic integrity and understand the principles of EDI in science	Ethics in science communication including social media & ChatGPT	3
Collaboration and group work	Work effectively in groups within and across disciplines	Workshopping and peer review	3
Critical thinking	Analyze and evaluate information to make science-based decisions	Spotting misinformation, peer review, media critique, policy brief	3
Computer proficiency	Use common and discipline- specific software	Evaluating and working with ChatGPT generated content	3
Scientific communication	Communicate science effectively to both scientific and general audiences	Policy brief, letters to government, writing for social media, proposal development	3