

Graduate Seminar

BIOL5010

Course Outline

Fall 2025

"Even more than what you think, how you think matters"

– Dr. Atul Gawande

LAND ACKNOWLEDGEMENT

Lakehead University respectfully acknowledges its campuses are located on the traditional lands of Indigenous peoples.

Lakehead Thunder Bay is located on the traditional lands of the Fort William First Nation, Signatory to the Robinson Superior Treaty of 1850. Lakehead Orillia is located on the traditional territory of the Anishinaabeg. The Anishinaabeg include the Ojibwe, Odawa, and Pottawatomi nations, collectively known as the Three Fires Confederacy.

Lakehead University acknowledges the history that many nations hold in the areas around our campuses, and is committed to a relationship with First Nations, Métis, and Inuit peoples based on the principles of mutual trust, respect, reciprocity, and collaboration in the spirit of reconciliation.

WHO WILL BE TEACHING AND HOW TO I CONTACT THEM?

Instructor:

Dr. Adam Algar (he/him)

aalgar@lakeheadu.ca

Office: CB4018

Lab: CB3006

Extension: 8562

Office hours:

I don't set office hours because 1) you're grad students and 2) students almost never use them. If you want to talk/meet, email me, come by my office or – if you're in T-Bay - just find me wandering around CB because I took an inefficient route from the lab to the office.

EQUITY, DIVERSITY & INCLUSION

In this class I want us to:

- Develop an environment of mutual respect and safety in, and out of, the classroom and tutorial room for all participants, regardless of culture, ethnicity, gender identity, national origin, race, sex, sexual orientation, socio-economic status, religion, mental and physical ability, experience, or other aspects of identity or background.

- Foster an environment where the merit of ideas, hypotheses, and data are rigorously evaluated and challenged, but the merit of individuals is never in question.

You are expected to abide by the following principle(s) in class, seminars and online:

- Be respectful in all of your interactions.
 - Remember that others have different life experiences, perspectives, backgrounds, strengths, and challenges.
 - Challenge ideas, inferences, and evidence but not individuals
 - Listen and learn. Do not dominate discussions.
 - Be willing to change your mind if another argument, dataset, or set of evidence is stronger.
 - Racist, sexist, or other discriminatory behaviour will not be tolerated. Nor will harassment or bullying of any kind.

Throughout the course we will focus on a scientific approach based on the hypothetico-deductive method. This is just one way of knowing.

- There are other ways of knowing and learning about the world. Our focus on scientific method has no bearing on the value of other forms of knowing.

Science, including biology, has a history of discrimination and colonialism that still exists. We will bear this in mind throughout the course, especially as:

- The theory and empirical work that will be discussed has been done overwhelmingly by white males of European descent as people with other backgrounds and identities were excluded
- Some of these researchers had racist, sexist and other discriminatory views. And some of this research was used to strengthen and perpetuate hatred, racism, prejudice, sexism, colonialism and discriminatory world views.
- Discussion of these ideas, and researchers, is not meant – in any way – to indicate an acceptance of these views, or to excuse them.

I am still learning about diversity, equity and inclusion. and trying to improve.

- If I make mistakes, please draw these to my attention and feel free to discuss any concerns that you have with me.

WHEN AND WHERE IS CLASS?

Discussions & Seminars: Fridays, 2:30pm-5:30pm (Thunder Bay local time)

Locations:

Thunder Bay

- Discussions (before Oct 10): Location to be determined
- Seminars (starting Oct 10): AT1006

Orillia

- Zoom (see links through D2L/courselink page)

WHAT WILL I BE LEARNING?

At the end of the course you will be able to:

- Explain different types of inference used in science
- Explain the hypothetico-deductive method
- Understand the role of peer review in generating reliable knowledge
- Be able to read, discuss and critique scientific findings
- Structure and deliver a presentation on a proposed area of scientific enquiry

WHAT WILL I BE READING?

Individual readings will be assigned as we go. These will be freely available. There is no required or recommended textbook.

WHAT WILL WE COVER?

This is a general outline and is subject to change:

Date	Location (Zoom for Orillia)	Topic (All subject to change)
Sept 6	CB3013	TA Workshop
Sept 12	TBD	What is Science?
Sept 19	TBD	Publishing, Peer Review, and the Scientific Paper
Sept 26	TBD	Communication 1: CCQH
Oct 3	TBD	Building a more inclusive, diverse and equitable science
Oct 10	AT1006	Communication 2/Seminar 1: TBD
Oct 17	None	Fall Study Break
Oct 24	AT1006	Discussion/Seminar 2: Dr. Sean Landsman (Carleton University)
Oct 31	AT1006	Discussion/Seminar 3: Hui Peng (University of Toronto)
Nov 7	Zoom	Discussion/Seminar 4: Dr. Jen Perry (St. Francis Xavier University)
Nov 14	AT1006	Presentation practice and feedback
Nov 21	AT1006	Discussion/Seminar 5: Dr. Tom Johnston (Laurentian University)
Nov 29	AT1006	Proposal presentations

TBD: To be determined

How WILL I BE EVALUATED?

- Discussion of ideas, concepts, and evidence are a valuable part of science and I encourage you to discuss them with your peers and instructors. **However, all assessments must be completed individually.**
- **Due dates are subject to change but will never be earlier than listed below without consensus from the class.**
- All assignments to be submitted via D2L (including presentation slides)
- **Late penalties: 5% per day after the deadline.** It's grad school so I'll try to be accommodating if you need an extension or penalty waived for a valid reason. Best to speak to me in advance (unless the circumstances underlying the request make this infeasible).

Seminar Critiques (Best 3): $3 \times 10\% = 30\%$

Short (2 page maximum) summary and critique of seminars by visiting researchers. More details to be given in class prior to the seminars. Critiquing the first seminar is mandatory. After that you can choose. If you do more than 3, the highest 3 marks will be used

- Due prior to the subsequent seminar

Proposal Presentation: 30%

Presentation of your research proposal (great prep for your first committee meeting) to the Department of Biology

- All presentations will take place on Nov 29

Attendance and participation in discussion: 15%

Attendance is mandatory unless you have a valid reason. If you can't attend something, let me know (it's grad school, and I understand that life and research things come up, so I'll be accommodating where possible but need to ensure fairness for everyone). Sessions will be discussion based. Gaining confidence in participating in discussions is a valuable part of your scientific training. Participation includes asking questions at seminars.

Peer Review Exercise: 10%

You will review/critique a scientific preprint (as if it was a peer review) and provide peer feedback.

- Due Oct 3, 11:59pm

Lay Summary and Peer Feedback: 5%

Write a lay summary (i.e. for a non-scientific audience) of your proposed research (200 word maximum)

- Due Nov 21, 11:59pm

Reflection: 10%

After the course completes you will write a personal reflection on what you learned from the course, how you approached it and what was positive and what could be improved. Approximately 2 pages double-spaced

- Due Dec 2, 11:59pm

WHAT ELSE DO I NEED TO KNOW?

Assignment & Exam Integrity

By taking this course, you agree to the following:

I understand and agree that:

- (a) Unless otherwise allowed by the course instructor, I must complete the assignments in this course without the assistance of anyone else.
- (b) Unless otherwise allowed by the course instructor, I must not access any sources or materials (in print, online, or in any other way) to complete any course exam.

I further understand and agree that, if I violate either of these two rules, or if I provide any false or misleading information about my completion of course assignments or exams, I may be prosecuted under the Lakehead University Student Code of Conduct – Academic Integrity, which requires students to act ethically and with integrity in academic matters and to demonstrate behaviours that support the University's academic values.

GenAI Use Prohibited

Generative artificial intelligence (Generative AI or GenAI) is a category of AI systems capable of generating text, images, or other media in response to prompts. These systems include ChatGPT and its variants Bing (built by OpenAI) and Bard (built by Google) among several others. Other Generative AI models include artificial intelligence art systems such as Stable Diffusion, Midjourney, and DALL-E.

Any use of GenAI systems to produce assignments for this course is not permitted **unless explicit permission/direction is given by instructor**. All work submitted for evaluation in this course must be the student's original work **unless explicit permission/direction is given by instructor**. The submission of any work containing AI generated content will be considered a violation of academic integrity ("Use of Unauthorized Materials") **unless explicit permission/direction is given by instructor**.

Accommodations and Accessibility

Lakehead University is committed to achieving full accessibility for persons with disabilities/medical conditions. Part of this commitment includes arranging academic accommodations for students with disabilities/medical conditions to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability/medical condition and think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as

early as possible. For more information, please email sas@lakeheadu.ca or visit <https://www.lakeheadu.ca/faculty-and-staff/departments/services/sas>

I aim to ensure that all students can achieve their best possible results, so if you have circumstances affecting your assessments, please speak to me as soon as you can.

For students registered with Student Accessibility Services, Student Accessibility Services will get in touch with me about your accommodations. Thus, there is no requirement that you speak to me about them directly, but you are welcome to do so if you wish, especially if you have any concerns about getting accommodations in place early. Also, please feel free to feed back to me during the semester regarding accessibility and accommodations, either directly or through your Accessibility Advisor, so that we can make changes or adjustments that will improve accessibility and better implement accommodations.

Academic Integrity

I have no tolerance for academic dishonesty and breaches of Academic Integrity. To me, it is theft. Theft of the hard work, the ideas, and achievements of others. And if you obtain your degree through dishonesty you are stealing future jobs, academic positions and/or other opportunities from others who have earned them.

A breach of Academic Integrity is a serious offence. The principle of Academic Integrity, particularly of doing one's own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study. Students are strongly advised to familiarize themselves with the Student Code of Conduct - Academic Integrity ("[The Code](#)") - and, in particular, sections 26 and 83 through 85. Non-compliance with the Code will NOT be tolerated in this course and the Code will be adhered to in terms of disciplinary action. The Code provides a full description of academic offences, procedures when Academic Integrity breaches are suspected and sanctions for breaches of Academic Integrity.

Copyright Compliance

By taking the course you sign up to the following statement:

I understand and agree that all instructional, reference, and administrative materials to which I am given access in this course (the "course materials"), whether they consist of text, still or kinetic images, or sound, whether they are in digital or hard copy formats, and in whatever media they are offered, are protected in their entirety by copyright, and that to comply with this copyright and the law.

- (a) I may access and download the course materials only for my own personal and non-commercial use for this course; and
- (b) I am not permitted to download, copy, store (in any medium), forward or share, transmit, broadcast, show, post or play in public, adapt, or change in any way any text, image, or sound component of the course materials for any other purpose whatsoever except as expressly authorized, and only to the extent authorized, in writing, by the course instructor.

I further understand and agree that, if I infringe the copyright of the course materials in any way, I may be prosecuted under the Lakehead University Student Code of Conduct – Academic Integrity, which requires students to act ethically and with integrity in academic matters and to demonstrate behaviours that support the University's academic values.

Recording Lectures and Class Activities

In Graduate Seminar, BIO3050, instructions **may** be recorded, where possible, for confidential access by students registered in the course but who are unable to attend class due to the pandemic or other necessity. To the greatest extent possible only the image and voice of the instructor will be recorded for this purpose but, due to class interaction, the images and voices of students present in the classroom may be incidentally recorded and, thus, be available for access by course students in remote locations. These recordings, however, are strictly confidential and may be used only by the instructor and students registered in the course and only for purposes related to the course. They may otherwise not be used or disclosed. Students in the classroom who are concerned about being recorded in this fashion may request the instructor to exclude them from the recording to the greatest degree possible on the understanding that total exclusion cannot be guaranteed. The recordings are made under the authority of sections 3 and 14 of The Lakehead University Act, 1965. Questions about the collection of the images and sounds in the recordings may be directed to the Chair of the Department of Biology, Lakehead University, 955 Oliver Rd, Thunder Bay, ON, P7B 5E1, +1 (807) 343-8010 ext 8460.