**About This Course:**

The sciences expand our understanding of the world by posing questions and by collecting evidence to address these questions. In order to have an impact, the information and insights generated by scientific research also need to be effectively communicated, whether to publics, policymakers, or to other scientists. This course will teach written and oral communication tailored to the life sciences. The course will give you an opportunity to shape your oral, written, and visual communication skills through iterative design processes that emphasize student agency and confidence, individually and collaboratively. You will craft messages for internal and external audiences, including scientists, government stakeholders, affected communities, or broader publics. You will learn a variety of genres such as research reports, grant proposals, conference abstracts, conference posters, public talks, blog post, podcasts, and/or town halls. Overall, this course will help to enhance your capacity to share research findings, communicate ethically, and thereby, bring about effective changes.

**Course Goals:**

Specifically, by the end of the course, learners should be able to:

- design, draft, and persuasively deliver scientific communications to expert and non-expert audiences;
- justify decisions about the language, content, and genre used when communicating scientific information;
- practice collaboration and peer review in support of iterative communication design processes, including revision;
- practice research processes to find, assess, document, incorporate, and cite research resources and communicate research findings;
- describe and appraise the purposes and ethical concerns of science communication.

**Required Texts and Materials:**

Online readings. See course LEARN site.
Assignments and Grading:

Attendance/Participation: 15%
Citation Assignment (September 24): 5%
Grammar Assignment (October 1): 5%
Policy Brief Analysis/Peer Review 1 (October 8): 15%/2.5%
Presentation (October 29th and October 31st): 10%
Grant Proposal (November 12): 15%
Reading Response (November 28): 5%
Research Paper/Peer Review 2 (December 6): 25%/2.5%

Attendance/Participation (15%): Participation means that you come to class ready to express your own ideas and exchange them with your other classmates and myself. Attendance is crucial for your participation mark but attendance alone does not count for full participation.

Citation Assignment (5%): For this assignment, I will place a text on Learn that you will examine in order to determine what is cited properly and what is cited improperly, as per our class discussions. September 24

Grammar Assignment (5%): This assignment asks you to point out the grammatical errors (sentence fragments, comma splices, misuse of semi-colons, etc.) in a text that I will place on Learn. October 1

Policy Brief Analysis (15%): I will provide a number of policy brief examples for you. For this project, I am asking you to examine and evaluate two policy briefs in a 3-4 page analysis. In your analysis, you will want to discuss what is that problem that is being identified, what is being advocated (or what alternatives are being outlined) and who is the target audience. More significantly, though, you are to evaluate both works in order to consider whether or not you find the briefs to be focused, professional, evidence-based, succinct, understandable, accessible (does it follow the common structural elements and if not does it still have a clear structure?), and feasible for its target audience. Ultimately, you want to go with your actual impressions here, so there is no particular conclusion you need to reach (don’t feel you have to think one is better than the other unless that is your genuine reaction). You will attach a copy of the peer-review sheet onto your policy brief file and submit a physical copy of the assignment in class on October 8.

Presentation (10%): This will be a group assignment. You’ve been invited to give a talk at your local library about your work. Your audience could be anyone: other scientists, people interested in your topic, students, families looking for an educational opportunity, etc. Demographics include a range of learners and you’re going to have to figure out how to communicate your complex subject to a wide audience. You will first need to decide what aspect of your topic you think will appeal to your audience. What is particularly interesting about your work and what do you most want to share with others? Then you can begin the hard work of planning a talk. You will want to figure out how much you can cover in just 15 minutes! It isn’t a long time to talk so you’re going to need to be selective about what you cover. Prepare a slideshow or some other kind of multimedia to use during your talk. If you would rather not use media to support your talk, that is okay, but you’ll want to think about performative aspects of how you’ll tell your
story. Are you able to modulate your voice, do you have vivid metaphors to describe abstract concepts, and does your story follow an arc with a powerful conclusion? A team member will submit the presentation notes or slides as a single document on Learn on the day of your presentation. **October 29th and October 31st**

You should be sure that your presentation is:
- No more than 15 minutes long,
- polished and practiced, and
- aimed at a wide audience with different kinds of expertise

**Grant Proposal (15%)**: You will complete this assignment on your own. For this assignment you will create a grant proposal on the topic that you intend to write on for your final research report. As per the discussion in class, the proposal should contain a title page, abstract, introduction, literature review, project narrative, and timeframe. This proposal is in many ways meant to be a helpful way to get you thinking about the final project. In that respect, you are not bound to what you write in the proposal. In fact, my comments will potentially allow you to reconsider various elements of the final team project. **November 12**

**Reading Response (5%)**: Beginning November 5th, we will be examining various articles that theoretically discuss publicizing scientific information to a broad public audience as well as various genres (blogs, podcasts, town halls) that outright attempt to do so. This 300-500 word assignment will respond to one of the articles as well as a blog, podcast, or town hall that we discussed in class in order to assess whether you consider it to be a successful and/or necessary dissemination of information for the public. Make sure that you discuss specifics of both texts you choose to discuss rather than speak about them in general terms. **November 28th**

**Research Paper (25%)**: Following the conventions of a scientific report/paper, you will produce a 5-6 page research document on a topic related to your particular field of scientific study that is written for a semi-specialist or non-specialist audience. If you wish, the topic may be derived from what you discussed in your oral presentation. Following the conventions of a scientific paper means you need to include an introduction, methods section (what you did in your research), hypothesis, results, discussion etc. For the purposes of this paper, in your “hypothesis” section you could describe what working knowledge you had of the topic you researched and justify what made this topic interesting to research. In your methods section you can describe how you went about finding your research materials, where you looked, and what approach you took in reading, evaluating and analyzing/synthesizing the content of your sources. The project should make use of legitimate and authoritative sources. The final grade will consider the application of the research and depth of analysis, the appropriateness of the style for the audience, the structure of the paper, and the overall clarity and concision of the writing. You will attach a copy of the peer-review sheet onto your research paper file and submit the assignment to LEARN any time before 11:59pm on **December 6**

**Peer Review (5%)**: The policy brief and the research paper will be subject to a peer review process, in which you will read through the work of your peers and complete a form that offers constructive feedback to help your peers improve their writing. Each form is worth 2.5% of your final mark. **October 8 and December 6**
EDGE Workshop
The Skills Identification and Articulation Workshop helps students identify the skills they are developing throughout their undergraduate career. Students who complete this workshop will become better able to recognize their skills and develop strategies for expressing these to target audiences (e.g. to potential employers in job interviews). The workshop was developed and will be facilitated by a Career Advisor from the Centre for Career Action. It has been tailored to the Communication in the Sciences course, so as to help students gain a deeper understanding of how class activities and concepts can be applied in a variety of employment and professional contexts. Students who are actively pursuing the EDGE certificate, or who wish to pursue the program in the future, will receive a milestone for participation in the workshop.

Course policies:

Missed classes and assignments
With the exception of the exam, all assignments are to be handed in on LEARN by 11:59pm on the day the assignment is due. Microsoft Word documents are preferred over PDF and Pages. Marks will be returned on Learn. The penalty for a late assignment is 2% per day, including weekend days. This will be incurred in all cases except certified emergencies. Papers more than ten days late will not be accepted, and a mark of zero will be given for the assignments.

A doctor’s note is required to avoid a late penalty, and it should document serious illness on and for the period directly preceding the due date for assignments, or on the scheduled dates of exams.

In cases of personal matters such as mental health concerns, I am very sympathetic but I am also unable to properly evaluate these cases. If you need an extension on work for such issues, it is crucial to go to AccessAbility and have them evaluate your case. They can then contact me if they believe you require alternate accommodations for assignments. At that point, I am always happy to help the student in any way that I can. Please see more information below for AccessAbility as well as for counselling services. If you miss a class for unavoidable circumstances, please connect with a classmate to discuss the material that was covered during your absence.

Appointments and email:
I am always happy to meet with students to discuss course matters, including difficulties with the material or upcoming assignments. Please feel free to visit my office hours, make an appointment to meet with me, or send me an email.

If you send me an email, please wait 24 hours before sending me a reminder. I may not be able to respond right away, or I may be looking into the matter on your behalf, but I will get back to you as soon as possible. If you have not received a response after 24 hours, or 48 hours on a weekend, please email me again. Please note that mail from some external email servers, such as Hotmail or Yahoo, may be bounced by the university server.
Email should be reserved for relatively simple communication matters, such as brief questions or to make an appointment. If your query will require a longer conversation as in, for example, the discussion of a grade or an assignment, please come see me in person. In general, I will not give out marks over email.

**Academic Integrity**

In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility. Check the [Office of Academic Integrity website](#) for more information.

**Discipline**

A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. [Check the Office of Academic Integrity for more information.](#) A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate associate dean. For information on categories of offences and types of penalties, students should refer to [Policy 71, Student Discipline](#). For typical penalties, check [Guidelines for the Assessment of Penalties](#).

**Grievance**

A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70, Student Petitions and Grievances, Section 4](#). When in doubt, please be certain to contact the department’s administrative assistant who will provide further assistance.

**Appeals**

A decision made or penalty imposed under [Policy 70, Student Petitions and Grievances](#) (other than a petition) or [Policy 71, Student Discipline](#) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to [Policy 72, Student Appeals](#).

**Accommodation for Students with Disabilities**

*Note for students with disabilities:* [AccessAbility Services](#), located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with [AccessAbility Services](#) at the beginning of each academic term.

**Mental Health Support**

All of us need a support system. The faculty and staff in Arts encourage students to seek out mental health support if they are needed.
On Campus
- Counselling Services: counselling.services@uwaterloo.ca / 519-888-4567 ext. 32655
- MATES: one-to-one peer support program offered by Federation of Students (FEDS) and Counselling Services
- Health Services Emergency service: located across the creek form Student Life Centre

Off campus, 24/7
- Good2Talk: Free confidential help line for post-secondary students. Phone: 1-866-925-5454
- Grand River Hospital: Emergency care for mental health crisis. Phone: 519-749-4300 ext. 6880
- Here 24/7: Mental Health and Crisis Service Team. Phone: 1-844-437-3247
- OK2BME: set of support services for lesbian, gay, bisexual, transgender or questioning teens in Waterloo. Phone: 519-884-0000 extension 213

Full details can be found online on the Faculty of Arts website
Download UWaterloo and regional mental health resources (PDF)
Download the WatSafe app to your phone to quickly access mental health support information

Territorial Acknowledgement
We acknowledge that we are living and working on the traditional territory of the Attawandaron (also known as Neutral), Anishinaabe and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land promised to the Six Nations that includes ten kilometres on each side of the Grand River.
For more information about the purpose of territorial acknowledgements, please see the CAUT Guide to Acknowledging Traditional Territory (PDF).

Academic freedom at the University of Waterloo
Policy 33, Ethical Behaviour states, as one of its general principles (Section 1), “The University supports academic freedom for all members of the University community. Academic freedom carries with it the duty to use that freedom in a manner consistent with the scholarly obligation to base teaching and research on an honest and ethical quest for knowledge. In the context of this policy, ‘academic freedom’ refers to academic activities, including teaching and scholarship, as is articulated in the principles set out in the Memorandum of Agreement between the FAUW and the University of Waterloo, 1998 (Article 6). The academic environment which fosters free debate may from time to time include the presentation or discussion of unpopular opinions or controversial material. Such material shall be dealt with as openly, respectfully and sensitively as possible.” This definition is repeated in Policies 70 and 71, and in the Memorandum of Agreement, Section 6.

Schedule:

September 5: Introduction

September 10: “Does classroom participation improve student learning?” Murray and Lang

September 17: Research Workshop

September 19: Academic Integrity

September 24: Style/Grammar **Citations Assignment Due**

September 26: Montgomery, “The Scientific Paper: A Realistic View and Practical Advice”

October 1: Peer Review for Policy Assignment, **Grammar Assignment Due**

October 3: Forming groups for presentations, Read Chapter 5, “Tables and Figures” from *Publications Handbook and Style Manual*

Read: [https://www.aaas.org/resources/communication-toolkit/using-visuals-presentations](https://www.aaas.org/resources/communication-toolkit/using-visuals-presentations)

October 8: Oral Presentation Tips, **Policy Analysis Due**

October 10: EDGE Workshop (see note above)

October 22: Grant Proposals: [https://writingcenter.unc.edu/tips-and-tools/grant-proposals-or-give-me-the-money/](https://writingcenter.unc.edu/tips-and-tools/grant-proposals-or-give-me-the-money/)

October 24: Presentation Workshop

October 29: **Group Presentations**

October 31: **Group Presentations**

November 5: “Using narratives and storytelling to communicate science with nonexpert audiences,” Michael F. Dahlstrom; “The Public Understanding of Science,” Durant, Evans, Thomas

November 7: Discussing Town Hall Video (on LEARN)

November 12: “The Kind of Mildly Curious Sort of Science Interested Person Like Me,” Ranger and Bultitude, **Grant Proposal Due**

November 14: Discussing Science Blogs

November 19: “Another (Methodological) Look at Knowledge Gaps and the Internet’s Potential for Closing Them,” Cacciatore, Scheufele, and Corley

November 21: Discussing *The Life Scientific* podcast: [https://www.bbc.co.uk/sounds/play/m0006zt6](https://www.bbc.co.uk/sounds/play/m0006zt6)

November 28: Bring and discuss example of science on Social Media, **Reading Response Due**

December 3: Peer Review 2

**Research Project: December 6**