ENGL 193-047, 048, & 049 – Communication in the Sciences – Online
Fall 2020

Instructor Information
Instructor: Dr. Megan Selinger
Office: HH 155 (Home Office in the Fall term)
Office Hours: TBD in the chat feature.
You can also email to set up an alternate time to chat!
Email: megan.selinger@uwaterloo.ca

Course Description
Science expands our understanding of the world by questioning perceived truths and seeking out new answers. However, to have an impact, the information and insights generated by scientific research must be effectively communicated, whether to publics, policymakers, or other scientists.

In this course you will learn effective written, oral, and visual communication in the physical sciences. You will have the opportunity to enhance these communication skills through iterative design processes that emphasize attention to your audience and the purpose of your communications. You will work individually and collaboratively, using a variety of genres used in scientific communications, to craft messages for internal and external audiences, including scientists, government stakeholders, affected communities, and broader publics. Overall, this course will enhance your capacity to conduct research and report research findings, communicate ethically, and thereby effect change.

Course Goals and Learning Outcomes
Communication is essential for scientists who communicate in many different ways with many different audiences. In this course we will introduce you to a variety of ways scientists communicate, giving you the basis to begin sharing the importance of science in more tailored, concise and effective messaging.

Course Outcomes
By the end of the course, you 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 Readings Available on LEARN**
Readings will be made available to students as PDFs on LEARN or online through the UW Library. If you are having any trouble accessing the readings, please let me know.

**Course Requirements and Assessment**
In this course a passing grade is 50%. You will need to complete the following assignments and activities. Assignments will be submitted and feedback will be provided through LEARN. This course has no exam.

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Date of Evaluation</th>
<th>Weighting</th>
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<tbody>
<tr>
<td>Contribution</td>
<td>Throughout term</td>
<td>20%</td>
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<tr>
<td>Peer Review</td>
<td>Throughout term</td>
<td>5%</td>
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<tr>
<td>Annotated Bibliography &amp; Article Analysis</td>
<td>Sept 27</td>
<td>15%</td>
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<tr>
<td>Public Presentation</td>
<td>Oct 19 (Video Submission)</td>
<td>20%</td>
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<td></td>
<td>Oct 22 (Questions)</td>
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<td></td>
<td>Oct 25 (Answers)</td>
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<tr>
<td>Science Poster &amp; Presentation (Group Work)</td>
<td>Nov 15 (Poster &amp; Video Submission)</td>
<td>20%</td>
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<td>Nov 19 (Questions &amp; Peer Review)</td>
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<td>Nov 22 (Answers &amp; Poster Revision)</td>
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<tr>
<td>Public Understanding of Science Report</td>
<td>Dec 06</td>
<td>20%</td>
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<tr>
<td><strong>Total</strong></td>
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<td><strong>100%</strong></td>
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**Assignment Breakdown**

**Contribution Assessment**
Building strong writing skills demands frequent practice. In this class, I measure participation in several ways. I monitor your involvement in class discussions on the discussion board on ideas discussed during the lectures and on the readings for the week. I also review your Classroom Worksheets.

**Requirements:**
Each week – except for presentation weeks – you must create at least 4 comprehensive and meaningful posts on discussion board. You need to post twice in responses to the prompts – or create your own post. You also need to post twice directly responding to other members in your group. Your main posts should be at least 150 words.

Each week – except for presentation weeks – you will complete classroom worksheets and submit these to the Homework and Worksheet dropbox. There will be 1-2 worksheets associated with the course material for that week.

**Grading:**
To receive grades for the above work, you need to complete a self-assessment quiz detailing your contribution for that week. You can receive up to 10 marks each week for the 10 associated weeks.

**Peer Review**
This course will require you to conduct peer review of other classmates’ work and evaluate how the peer review material helped you understand your own work. You will also need to write a 1-2 page response in how peer review impacted your understanding of your work and the revision process.
Annotated Bibliography & Article Analysis
This assignment has two parts: an annotated bibliography, and a C.A.R.S. article analysis. Each section is equally weighted.

Annotated Bibliography
First, find and locate two current scholarly science articles which use the IMRaD format. These should be on topics and/or areas of science that you find interesting. The article must have been published in the last 5 years. For each article, you must also locate one non-scholarly text (newspaper article, Reddit post, which discusses that exact research.

For each of your four texts, you need to create an annotated list of references. For each text:
- Provide the reference of the article/text in APA format
- Below, in paragraph format, discuss the text:
  - Give the authority of the author and the point of view from which he/she writes. Indicate the nature of the text’s content, its scope and quality.
  - Point out the sources’ strengths and weaknesses.
  - For each scholarly text, discuss your interest in this topic and how this text relates to that interest. For the non-academic texts, discuss how this format presents this information in an interesting manner (video, newspaper, twitter discussion etc.)

Article Analysis
For the second half of this assignment, choose one of the two academic articles. Prepare a written analysis of the introduction of the article to show how the authors use the Swales C.A.R.S. model, and to comment on how the article has made a valuable contribution to its field.

- Article details: Introduce the article, detailing the title, authors, publication, and year of publication. Include number of citations (if few, connect this to the year of publication).
- Structural analysis: critically examine the article’s introduction, outlining specific evidence of where and how the authors develop the components of the C.A.R.S Introduction model.
  - Identify why target audiences would find this relevant and why.
  - Demonstrate evidence in the text on where the different moves and sub-moves of the model occur.
  - Highlight the research that this article is specifically acting in response to and how it attempts to fill the gaps in research.
  - Discuss where the authors develop elements particularly well or weakly.
- Evaluate contribution: Provide a concise analysis explaining this article’s contribution to the field.

Please note: This assignment is the basis for other assignments. As such, you need to choose scholarly science articles you are interested in and you want to work with for the rest of the term projects.

Public Presentation Oral Assignment – Three Minute Thesis
In this assignment you must create a presentation as though you have been invited to give a talk at your local library about the work discussed in the Article Analysis. The demographics at the talk will 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 paper you think will appeal to a general audience. What is particularly interesting about your work and what do you most want to share with others? You will want to figure out how much you can cover about 3 minutes! It isn’t a long time to talk so you’re going to need to be selective. Prepare a single slide to help your audience visualize the project during your talk. You should be sure that your presentation is the correct length, polished and practiced, and aimed at a wide audience with different kinds of expertise.

Finally, you will write a 1-2 page analysis discussing the ways you have modified the information for a public audience.

**Poster Presentation and Conference Proposal (Group Assignment)**

Posters bring together almost every model of communication you need to master: written communication, visual communication (particularly data), oral communication in your short explanation of your research, and even interpersonal communication as you answer questions.

You will be placed in small groups of 3-5 students. In your group, choose one scientific article that can be represented both orally and visually and, together, create a poster based on that research article. In addition, you will write and record a short pitch about your work. You will also write a one-page design rationale that includes a justification for your focus, your design decisions, and that explains the importance and visual significance of any graphics you include. Each group member will write reflective memos about the collaborative process (to be handed in) and will sign a Group Assignment Disclosure.

You should be sure that the text is modified to suit poster format and not directly quoting the article itself. You need to ensure it is focused on a particular issue in the research you’re summarizing, includes graphics such as related images or visual representations of data, and is polished and free of errors.

**State of Science Report**

Finally, you must write a report on the state of your particular phenomenon in science and how it was represented differently in the public sphere. This assignment will let you trace the origins of science and understand how that is translated and changed to present that information to the public.

Select one of the following: your original published peer reviewed article, the peer review article from the poster presentation, OR a new article of your choice. Next select one popular non-academic accompaniments which also discuss the findings from that scientific article. You can use the non-academic text from your annotated bibliography or another of your choosing.

Your assignment is to write a critical analysis report analyzing all three pieces. You will need to critically analyze:

1. The raw science content (that which is found in your main science article).
2. How the science is framed in the non-academic sources (how is it referenced? What is the connection?).
3. The ways in which the material is modified, changed, or used to modify meaning.
# Course Outline

The following schedule is tentative and may change to depending on class needs.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic &amp; Details</th>
<th>Readings – Links and PDFs on LEARN</th>
<th>Assignments</th>
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<tbody>
<tr>
<td><strong>Unit 1: Writing for the Sciences</strong></td>
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<tr>
<td>1</td>
<td><strong>What is Science Communication? Welcome to the Course</strong></td>
<td>Fluoride Exposed. “How Fluoride is the Poster Child of Bad Communication”</td>
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<td><strong>The Genre of Science Research Articles: IMRaD and Article Analysis</strong></td>
<td><em>Instructional</em>: Puruggnan and Hewitt, “How to Read a Scientific Article”</td>
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<td>2</td>
<td><strong>C.A.R.S Model &amp; Documenting Evidence</strong></td>
<td>Instructional: Englander, K. <em>Writing and Publishing Science Research Papers in English</em> (selections)</td>
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<td>3</td>
<td><strong>Abstracts, Summaries, Paraphrases, and Tweets:</strong> Distinguishing central arguments; concise writing</td>
<td><a href="https://twitter.com/NASA">twitter.com/NASA</a> And <a href="https://twitter.com/MarsCuriosity">twitter.com/MarsCuriosity</a> (At least 15 tweets from each) * use Weibo if twitter is not accessible</td>
<td><strong>Annotated Bibliography &amp; Article Analysis</strong>&lt;br&gt;Due: Sept 27</td>
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<td><strong>Unit 2: Science and our Audiences</strong></td>
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<td>4</td>
<td><strong>Audience Analysis: Author and audience</strong></td>
<td>Hopper, T. “Why Bill Nye keeps getting bashed for not being a scientist” Bill Nye episode (any) OR Quirks and Quarks episode (any)</td>
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<td><strong>Presentation Skills:</strong> Presentations for the public; presenting online; Developing questions</td>
<td>Wu, K. “Why Can't Scientists Talk Like Regular Humans?” <em>Instructional</em>: Matthews, J. <em>Successful Science Writing</em> (selections)</td>
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<td>5</td>
<td><strong>Grant Writing, Science Policy and Null Results:</strong> Effective grant writing skills &amp; science’s impact on policy,</td>
<td>Gibbs, K &amp; Walsh, K. “Reversing Canada’s decade of darkness in science policy” Liboiron, M. “Not all marine fish eat plastics”</td>
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<td><strong>Citizen Science:</strong> Public interaction with science</td>
<td>Irwin, A. “No PhDs needed: How citizen science is transforming research”</td>
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<td><strong>Reading Week</strong></td>
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<td><strong>Unit 3: Being an Effective Science Communicator</strong></td>
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<td><strong>Public Presentation</strong>&lt;br&gt;Due: Oct 19</td>
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<td>Week</td>
<td>Topic &amp; Details</td>
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<td>6</td>
<td><strong>Presentations</strong>: Viewing Presentations</td>
<td><em>No readings</em></td>
<td><strong>Public Presentation Questions Due</strong>: Oct 22</td>
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<td><strong>Presentations</strong>: Questions and Responses</td>
<td><em>No readings</em></td>
<td>Public Presentation Answers Due: Oct 25</td>
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<td>7</td>
<td><strong>Science, Art, &amp; Media</strong>: Analysing art, interactive media, film, and games</td>
<td>Frayling, C. “Curse of the scientist!” Tosca, M. “Transcending Science: Can Artists Help Scientists Save the World?”</td>
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<td><strong>Scientific Visuals and Visualizations</strong>: From magazines to museum displays</td>
<td>Krishna, S. “What Stories Do the Symbols of the New Coronavirus Tell Us?”</td>
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<td>8</td>
<td><strong>Science Posters</strong>: Strategies &amp; poster design</td>
<td><em>Instructional</em>: Hofmann, A. “Posters and Conference Abstracts”</td>
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<td><strong>Science Posters 2</strong>: Effective summaries; designing posters</td>
<td>Dainis, A. “Scientific Poster. What is this thing?!”</td>
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<td>9</td>
<td><strong>Writing Techniques and Word Formation</strong>: Writing strategies, word choices &amp; persuasive language</td>
<td>Martinez-Conde, S., &amp; Macknik, S. L. “Opinion: Finding the plot in science storytelling in hopes of enhancing science communication”</td>
<td>Poster Design &amp; Presentation Due: Nov 15</td>
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<td></td>
<td><strong>The Public Understanding of Science</strong>: Science translated</td>
<td>Thomas, G., &amp; Durant, J. “Why should we promote the public understanding of science?” Nelson, N. “The @justsaysinmice problem goes far deeper than bad science reporting”</td>
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<td>10</td>
<td><strong>Science Posters &amp; Presentations</strong>: Viewing Posters and Pitches</td>
<td><em>No readings</em></td>
<td>Poster Questions &amp; Peer Review Due: Nov 19</td>
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<tr>
<td></td>
<td><strong>Science Posters &amp; Presentations</strong>: Questions and Responses</td>
<td><em>No readings</em></td>
<td>Poster Answers &amp; Resubmission Due: Nov 22</td>
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<td>11</td>
<td><strong>Doubt in Science</strong>: Dealing with uncertainty in science</td>
<td>Allison, D., Pavela, G., &amp; Oransky, I. “Reasonable Versus Unreasonable Doubt”</td>
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<td><strong>EDGE Workshop</strong>: Getting the EDGE on applying for jobs</td>
<td><em>No readings</em></td>
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<td>12</td>
<td><strong>Ethical Communication</strong>: Communication ethics;</td>
<td>Clark, K. “Myth of the genius solitary scientist is dangerous”</td>
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</table>
Tabuchi, H & Schlossberg, T. “Climate fwd: ‘As Scientists, We Have Yet to Close the Racial Disparities’”

**Ethical Communication 2:**
Gender & intercultural communications

Nature. “Infodemic: Coronavirus and the fake news pandemic”
ALiGN. “Is clickbait killing science journalism? The answer will shock you!”

**Assignments**

State of Science Report
Due: Dec 06

**Extensions and Late Policy**

Many unexpected events can happen over the course of the term. To ensure all students are treated in the same way, all requests for alternative assignment due dates must be submitted 24 hours before the deadline if at all possible. With a valid reason, you and I will agree on a new date.

Within 24 hours of the deadline (or after the assignment deadline) all requests must be accompanied by appropriate documentation from a doctor or health care professional. *Late assignments will be docked 5% per day.* Assignments more than 3 days late will not be accepted.

**Mental Health Support**

All of us need a support system. The faculty and staff in Arts encourage students to seek out mental health supports 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 from 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 at 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

**Diversity and Inclusion Statement**

It is my intention to create a space where all voices are encouraged and where diversity (of race, gender, sexuality, religion, class, ability, etc.) is acknowledged, respected, and recognized as a strength.

This course allows us to engage in conversations to deepen our understanding of complex ideas and situations. Yet expanding and enriching our knowledge of the world requires us to challenge our own presumptions and to take emotional and intellectual risks. Growth is not always comfortable – in fact, it is often decidedly uncomfortable – but it is a necessary part of learning.
That said, I want you to feel safe in the classroom. As such, I ask that you be respectful and considerate of each other - especially when there is disagreement or a multiplicity of opinions being expressed. I also request that you please come talk to me - either anonymously or directly - if there is a situation which is hostile or harmful to yourself or others.

Finally, I encourage all feedback (anonymous or direct) on ways that I can improve the course for you or other students.

**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 10 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)](https://www.caut.ca/)

**Cross-listed course (if applicable)**
Please note that a cross-listed course will count in all respective averages no matter under which rubric it has been taken. For example, a PHIL/PSCI cross-list will count in a Philosophy major average, even if the course was taken under the Political Science rubric.

**Academic Integrity**

*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](https://www.academicintegrity.ca/) 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](https://www.academicintegrity.ca/) 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](https://www.uwaterloo.ca/). For typical penalties, check [Guidelines for the Assessment of Penalties](https://www.uwaterloo.ca/).

*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](https://www.uwaterloo.ca/). 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](https://www.uwaterloo.ca/) (other than a petition) or [Policy 71, Student Discipline](https://www.uwaterloo.ca/) 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](https://www.uwaterloo.ca/).

*Turnitin.com and alternatives:* Text matching software (Turnitin®) may be used to screen assignments in this course. Turnitin® is used to verify that all materials and sources in assignments are documented.
Students’ submissions are stored on a U.S. server, therefore students must be given an alternative (e.g., scaffolded assignment or annotated bibliography), if they are concerned about their privacy and/or security. Students will be given due notice, in the first week of the term and/or at the time assignment details are provided, about arrangements and alternatives for the use of Turnitin in this course.

It is the responsibility of the student to notify the instructor if they, in the first week of term or at the time assignment details are provided, wish to submit the alternate assignment.

**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.