



University of Maryland  
CENTER FOR ENVIRONMENTAL SCIENCE

## Scientific Writing and Communication

2 credits

MEES

608D

Fall 2020

### Course Objectives / Overview

This professional development course will provide graduate students with a solid foundation in the fundamental concepts of scientific writing and communication to both scientists and citizens. Main topics will include the peer-review process and paper structure, how to develop strong editing and review skills, and how to craft effective research and outreach talks. Additional topics will include scientific ethics and application of communication skills to proposals, networking, job applications, and interviews.

Half of each class will focus on communicating science through writing, with emphasis on peer-reviewed publications. Hands-on experience with writing and editing throughout the semester will enable students to apply and practice the concepts that they learn in lecture, readings, and in-class discussions. Each week students will have a reading assignment and either a writing or editing assignment that focuses on understanding and developing the relevant skills needed for each section of a scientific paper. For example, the title and abstract will be the first writing assignment; a bulleted list of topic sentences for paragraphs in the results section will be one of the last writing assignments. In addition to receiving feedback from the instructors and TA, students will receive feedback from peers when they edit each other's work.

The second half of each class will focus on non-written communication (presentations and posters), with emphasis on narrative structure, images and graphics, and speaking skills. Some classes will be taught by guest lecturers who are professionals in science communication. Each student will be expected to prepare two short presentations (3 min each) on their research, one for scientists and one for non-technical audiences (e.g., for policy makers). By making these presentations in class, students will gain valuable practice speaking to different audiences and will receive suggestions from the instructors, their peers, and invited reviewers who will provide feedback from the 'non-scientist' perspective.

### Expected Learning Outcomes

Upon successful completion of the course, students should expect to:

#### INSTRUCTORS:

Elizabeth North  
410-221-8497\*  
[enorth@umces.edu](mailto:enorth@umces.edu)

Jacob Cram  
410-221-8481\*  
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[wnardin@umces.edu](mailto:wnardin@umces.edu)  
410-221-8232\*

Cindy Palinkas  
[cpalinkas@umces.edu](mailto:cpalinkas@umces.edu)  
410-221-8487\*

#### CLASS MEETING DETAILS:

**Dates:** Fridays  
**Times:** 9-10:50 am  
**Originating Site:** HPL  
**Zoom:** [Link](#)  
Meeting ID: 615498  
Passcode: 957 3366 9545

#### COURSE TYPE:

*Check all that apply*

- Foundation
- Professional Development
- Issue Study Group
- Seminar
- Elective

#### PREREQUISITS:

Students must have completed their first year of graduate study, or have permission of the instructor.

- gain a strong foundation in the fundamental concepts of scientific writing and communication,
- learn and apply these concepts through writing, editing, and speaking assignments,
- enhance professional development through increased competency in developing and writing scientific papers and giving presentations, and
- produce content for a manuscript intended for submission to a peer-reviewed journal,
- produce two three-minute talks, one for scientists, and one for a non-technical audience.

## **COMMUNICATIONS:**

**\*Please contact instructors via email to set up times for telephone or zoom calls.**

**If questions can be handled via email, please use “SciWriComm:” in the subject line and email all instructors: ([enorth@umces.edu](mailto:enorth@umces.edu), [jcram@umces.edu](mailto:jcram@umces.edu), [wnardin@umces.edu](mailto:wnardin@umces.edu), [cpalinkas@umces.edu](mailto:cpalinkas@umces.edu)).**

## **Course Assessment / Grading**

Each of the three main skills practiced during this semester (writing, editing, presenting) will be graded and will be worth the following percentage of the final grade:

18% - Bi-weekly Writing Assignments (6)

18% - Bi-weekly Editing Assignments (6)

34% - Speaking (two 3-min presentations; 2 assignments)

30% - Final Writing Project (compilation and enhancement of bi-weekly assignments)

## **List of Topics**

### **Scientific Writing**

- Introduction. What is scientific writing and why is it important? Why are ethics in science important and what are they?
- Overview: the format and structure of scientific papers
- Title, Abstract, and Authors
- How to edit a scientific paper
- Introduction
- Methods
- Figures and Tables
- Results
- Discussion
- Citations and references, acknowledgements
- Writing proposals
- Dealing with manuscript submission, reviews, page proofs, reprints, copyrights
- Job search materials (resumes, CVs, cover letters)

### **Scientific Communication**

- Why is non-written communication to scientists important? Why is effectively communicating science to citizens important?
- Preparing and presenting a talk at a scientific meeting
- Preparing and presenting a poster at a scientific meeting
- How public relations relate to communication skills: why your efforts matter

- Using visual media to communicate science to non-technical audiences
- Communicating science: perspectives from practitioners
- How to 'snap it up' when sharing science
- Discovering science: how to get the message across to non-scientists

## Diagram of Assignments

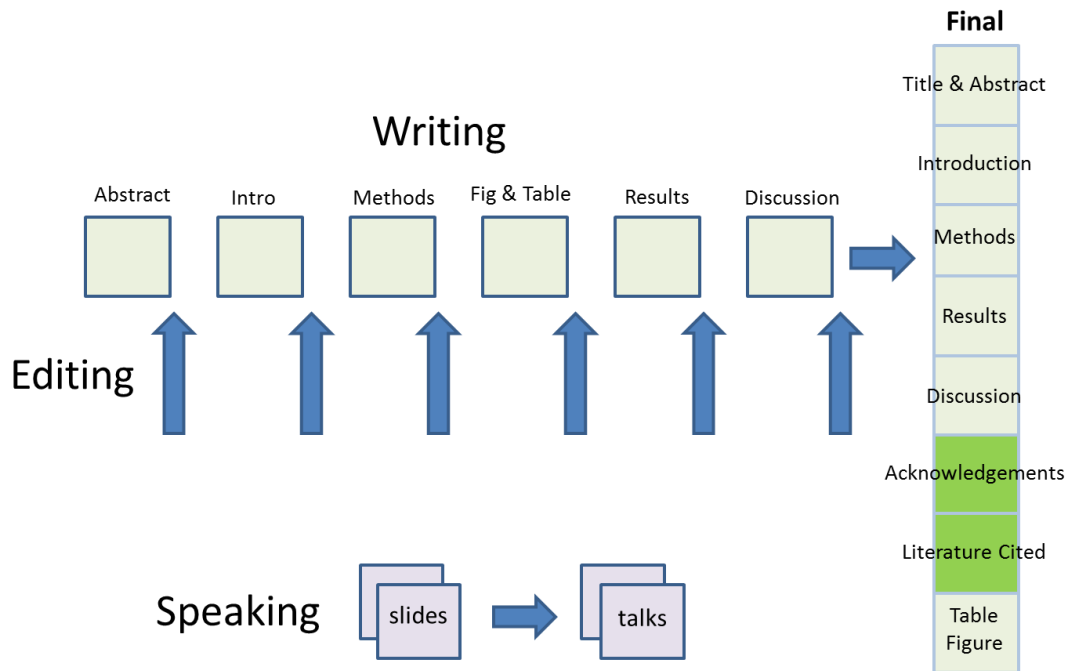


Fig. 1. Graphical depiction of writing, editing, and speaking assignments. The writing and editing assignments focus on skill development in each major section of a peer-reviewed scientific publication. The final writing project is a collection of the semester's writing assignments which have been revised and improved based on feedback from peers and instructors. Note that 1) the Acknowledgements and Literature Cited sections (green boxes) are components of the final assignment that are not part of the writing and editing assignments, and 2) the order of the sections in the final assignment correspond to the expected order of many peer-reviewed publications (the table and figure should be at the end). The speaking assignments focus on developing skills for presenting research to different audiences. The first of the speaking assignments is the slides for the two 3-minute talks, one to scientists and one to a non-technical audience. The second speaking assignment is an in-class presentation of the two 3-minute talks.

## Required textbooks, reading and/or software or computer needs

Students are encouraged to obtain copies of these texts for full resource access, though essential excerpts will be provided as .pdf files on the Moodle site.

Day, Robert A., and Barbara Gastel. 2011. *How to Write and Publish a Scientific Paper*, 7th edition. Greenwood, Santa Barbara, CA. 300 pp.

- Glasman-Deal, Hilary. 2010. Science research writing for non-native speakers of English. Imperial College Press, London.
- Olson, R. 2015. Houston, We Have a Narrative: Why Science Needs Story. University of Chicago Press, 256 pp.
- National Academies Press (NAS). 2009. On Being a Scientist, Third Edition. DOI: 10.17226/12192. Available at: [http://www.nap.edu/catalog.php?record\\_id=12192](http://www.nap.edu/catalog.php?record_id=12192)
- Silvia, Paul J. 2009. How to write a lot: A practical guide to productive academic writing. Amer. Psychological Assn., 146 pp.

## Course Communication

All course information, assignments, and video of lectures will be available through the MEES 608D web site: <https://sites.google.com/umces.edu/mees608dsciwrcom/home>. Students will be given access during the first week of class.

Please contact instructors via email to set up times for telephone or zoom calls.

If questions can be handled via email, please use “SciWriComm:” in the subject line and email all instructors: ([enorth@umces.edu](mailto:enorth@umces.edu), [jram@umces.edu](mailto:jram@umces.edu), [wwardin@umces.edu](mailto:wwardin@umces.edu), [cpalinkas@umces.edu](mailto:cpalinkas@umces.edu)).

## Resources

The Course website is <https://sites.google.com/umces.edu/mees608dsciwrcom/home>

## Campus Policies

The University of Maryland Center for Environmental Science has drafted and approved of various academic and research-related policies by which all students and faculty must abide.

Please visit <http://www.umces.edu/consolidated-usm-and-umces-policies-and-procedures> for a full list of campus-wide academic policies.

## Course-Specific Policies and Expectations

**Diversity Statement.** This classroom is a place where all individuals will be treated with respect, and individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences - are welcome. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.