



University of Maryland  
CENTER FOR ENVIRONMENTAL SCIENCE

## Scientific Writing and Communication

2 credits

# MEES 615

Fall 2023

### Course Objectives / Overview

Welcome to MEES 615 Scientific Writing and Communication! We are looking forward to an exciting semester, learning about your research, and continuing to grow our communication skills with you.

MEES 615 is a graduate professional development course that will provide you 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 paper structure, how to develop your editing and reviewing skills, and how to craft effective research and outreach talks. Additional topics will include scientific ethics and application of communication skills to proposals and job applications.

Half of each class will focus on communicating science through writing, with emphasis on peer-reviewed publications and in-class exercises, discussions, and workshops. Hands-on experience with writing and editing throughout the semester will enable you to apply and practice concepts from lectures, readings, and in-class discussions. Each week you will have a reading assignment and either a writing or editing assignment that focuses on understanding and developing the 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 results will be one of the last writing assignments. In addition to receiving feedback from the instructors and TA, you will receive feedback from your peers when you edit each other's work. The writing assignments will be based on your own research and will culminate in an outline of a peer-reviewed paper focused on your research.

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. You will be expected to prepare two short presentations (3 min each) on your research, one for scientists and one for non-technical audiences (e.g., for policy makers). By making these presentations in class, you will gain valuable practice speaking to different audiences and will receive suggestions from the instructors, your peers, and invited reviewers who will provide feedback from the non-technical perspective.

### INSTRUCTORS:

Elizabeth North  
[enorth@umces.edu](mailto:enorth@umces.edu)

Andrea Pain  
[apain@umces.edu](mailto:apain@umces.edu)

Michael Sieracki  
[msieracki@umces.edu](mailto:msieracki@umces.edu)

### TEACHING ASSISTANT

Paulina Huanca  
[phuanca@umces.edu](mailto:phuanca@umces.edu)

### CLASS MEETING DETAILS:

**Dates:** Fridays

**Times:** 9-10:50 am

**Originating Site:** HPL

**Zoom:**

Meeting ID: 847 9443 2353

Passcode: 696377

Link: <https://umces-edu.zoom.us/j/84794432353>

### COURSE TYPE:

*Check all that apply*

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

### PREREQUISITS:

Students must 1) have completed their first year of graduate study or have permission of the instructor, 2) have enough data from their research to produce one table and one figure, and 3) agree to write new text for each writing assignment.

## Expected Learning Outcomes

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

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

## 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% - Writing assignments (6)
- 18% - Editing assignments (6)
- 10% - Slides for the two 3-minute talks
- 25% - Two 3-minute talks
- 25% - Final writing project
- 4% - In-class participation

### 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), [apain@umces.edu](mailto:apain@umces.edu), [msieracki@umces.edu](mailto:msieracki@umces.edu), [phuanca@umces.edu](mailto:phuanca@umces.edu).

**NOTE: Include Paulina Huanca ([phuanca@umces.edu](mailto:phuanca@umces.edu)) on all emails!**

## List of Topics

### Scientific Writing

- What is scientific writing and why is it important?
- The format and structure of scientific papers
- How to edit a scientific paper
- Scientific writing and ethics
- Title, Abstract, and Authors
- Introduction
- Methods
- Figures and Tables
- Results
- Discussion
- Writing proposals
- Job search materials (resumes, CVs, LinkedIn)

### Scientific Communication

- Why is non-written communication to scientists and public audiences important?
- Communicating science to non-technical audiences

- Speaking to support diversity, equity, and inclusion
- Preparing and presenting a talk at a scientific meeting and to non-technical audiences
- Poster presentations at scientific meetings

## Diagram of Assignments

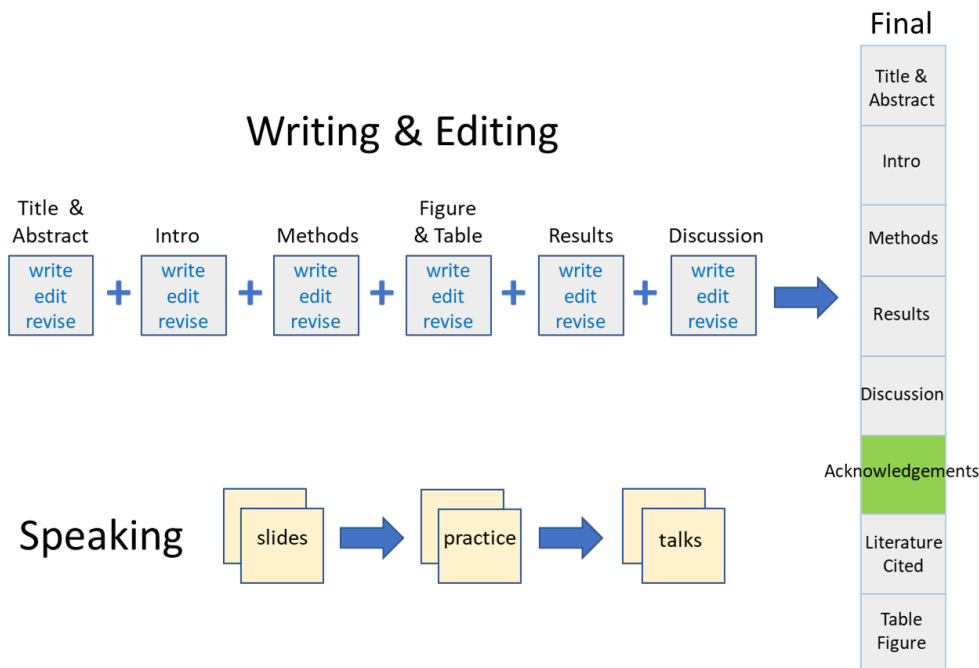


Fig. 1. Graphical depiction of writing, editing, and speaking assignments. The writing and editing assignments focus on skill development in each major section of a peer-reviewed scientific publication. The final writing project is a collection of your semester's writing assignments that you have revised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

## Textbooks and readings

Students are encouraged to obtain copies of these texts for full resource access, though essential excerpts will be provided as .pdf files. Many are available as e-books through USM libraries or interlibrary loan.

Gastel, Barbara, and Robert A. Day. 2022. *How to Write and Publish a Scientific Paper*, 9th edition. Greenwood, Santa Barbara, CA. 376 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 615 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), [apain@umces.edu](mailto:apain@umces.edu), [msieracki@umces.edu](mailto:msieracki@umces.edu), [phuanca@umces.edu](mailto:phuanca@umces.edu)).

## Resources

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

## 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.

## 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.