

Department of

## Engineering Education

# ENGR 7710: Engineering Research Communications

Spring 2021 | W/F at 9:35-10:55am | Location TBD | Instructor: Dr. Jennifer Herman

**Would you like to develop a systematic approach to the research writing and communication you'll need to do every day as a professional or academic engineer? Do you want to learn strategies to increase the likelihood that the significance of your work will be understood and your research manuscripts published?**



In ENGR 7710, you'll practice and develop skills needed for success in both academic and career communications for engineering. Topics we will address include the reading, analysis, and development of manuscripts for publication in engineering journals, including practice in organizing and writing

- **Abstracts • Introductions • Methods • Results • Discussion •**
- **Data Commentary • Conclusions •**

You'll learn best practices around problem definition and establishing research niche in a literature review, generating data and displaying it effectively, using and formatting citations appropriately, and preparing abstracts and manuscripts for submission to conferences and journals.

In addition to learning genre conventions of these staples of academia and the workplace, you'll also practice developing a scientific writing style and using narrative structures to organize scientific and research findings. You will learn strategies for and develop various modes of communication including written work (research papers, etc.) and oral/visual communication (research "pitch" and formal conference style presentations).

# Engineering 7710: Engineering Research Communications Spring 2021

**Email:** herman.125@osu.edu (best way to contact)

**Class meetings: synchronously online, via Zoom: W/F: 9:35-10:55am?**

**Office Hours: Via Zoom (persistent link: <http://osu.zoom.us/j/8387693621>): Mondays, 3:00-4:00pm, Wednesdays, 12:45-1:45pm, and by appointment**

## ENGR 7710 Course Overview –

In this class the combination of lecture, readings, course discussion and activities will help you develop a systematic approach to the research writing and communication you'll engage in every day as a professional or academic engineer. You will learn strategies you can use to increase the likelihood that the significance of your work will be understood and your research manuscripts published.

Topics we will address include the reading, analysis, and development of manuscripts for publication in engineering journals, including practice in organizing and writing

- Abstracts,
- Introductions,
- Methods,
- Results,
- Discussion,
- Data Commentary, and
- Conclusions

You'll learn best practices around problem definition and establishing research niche in a literature review, generating data and displaying it effectively, using and formatting citations appropriately, and preparing abstracts and manuscripts for submission to conferences and journals.

In addition to learning genre conventions of these staples of academia and the workplace, you'll also practice developing a scientific writing style and using narrative structures to organize scientific and research findings. You will learn strategies for and develop various modes of communication including written work (research papers, etc.) and oral/visual communication (research "pitch" and formal conference style presentations).

While most of the course focuses on the written and spoken communications of academic and professional engineers, some attention to the public communication of engineering research will also be addressed.

For the culminating project in this class, you will work toward developing an extended piece of writing of your choosing (this could be a dissertation chapter or section, a master's thesis chapter or section, a research manuscript for publication, or other document).

### **Potential Textbooks:**

Swales, J. M., & Feak, C. B. (2012). *Academic writing for graduate students: essential tasks and skills* (3<sup>rd</sup> ed.). Ann Arbor, Mich.: University of Michigan Press. Paperback available *used* on Amazon.com.

Day, R. A. (2011). *How to write & publish a scientific paper* (7th ed.). Phoenix, Az.: Oryx Press.

Scientific Writing and Communication: Papers, Proposals, and Presentations, 1st edition, Angelika Hoffman (2010)

The Craft of Scientific Writing (4th ed.). Michael Alley. (2018)

The Craft of Scientific Presentations: Critical Steps to Success and Critical Errors to Avoid, Michael Alley (2013)

### **Course Learning Objectives:**

1. You will be able to read and analyze the components of common academic writing such as scholarly articles.
2. You will improve your use of scientific writing style, including use of appropriate vocabulary, mechanics, and rhetorical and grammatical structures.
3. You will practice planning and drafting abstracts, introductions, methods and materials, discussion, and conclusion sections common to experimental research documentation.
4. You will practice developing clear problem statements and making a research plan for a course project you will define (in conversation with your adviser; projects are typically one of the following: a conference paper, a manuscript for publication in a journal, or a section of a dissertation chapter).

5. You will analyze graphics in sample papers and practice developing data and selecting an effective method for displaying that data either in a written draft or in an oral presentation.
6. You will practice citing sources correctly using a common citation style guide such as IEEE.
7. You will practice preparing sections of academic documents including abstracts for submissions pertinent to their purposes, such as for a conference paper or publication.
8. You will practice preparing the slides/poster and oral presentation component of a conference presentation.
9. You will be able to use common tools and resources to aid in your research communication projects.

#### **Topics Overview (not necessarily in this order)**

1. Article analysis, developing a research position
2. Writing compelling science narratives using academic style and clarity, including attention to audience, purpose, significance, structure, and vocabulary
3. Abstract and Introduction revisions
4. Methods and Materials revisions
5. Organization, style and content of a Discussion
6. Graphics choices and presentation, writing about data
7. Writing a Conclusion
8. Conference Submissions
9. Journal Submissions
10. Oral Presentation planning, drafting and delivery
11. Individual 10-minute Oral Presentation

#### **Course Graded Assignments** (The course schedule can be accessed on our Carmen page)

<b>Graded Item</b>	<b>Points Possible</b>	<b>Points Earned</b>
Participation in class discussion of textbook content	100	

Activities and assignments, both in- and outside class exercises, as specified in the calendar	100	
Article Analysis Presentation	200 (2 x 100 each)	
Course Writing Project	100	
Draft of Course Writing Project	100	
2-minute Research 'Elevator Pitch'		
10-minute Final Oral Presentation on a Topic in your field	100	

The course is graded A/A- through E

**The most successful students in this course are:**

- on time,
- attend every scheduled class meeting,
- meet with the professor for at least one individual conference
- ask frequent questions,
- participate vigorously in class discussion,
- treat others and their professor with respect,
- keep track of the course progress and turn in assignments on due dates,
- use, effectively, all of the course resources: text, professor, peer review opportunities, Carmen site

- aware of the ways that skills gained in this course will support success in future classes, in searching for assistantships, visiting professor and other professional positions, and in early experiences of professional life.

**You will receive comments on the accuracy of your response to assignments, your writing style, vocabulary, sentence and punctuation errors, paragraph and document organization, structure and logic. However, not every instance of any of these errors will be marked. Part of the course learning goals include developing the ability to find and correct your own errors and demonstrate that you have considered your rhetorical purposes and audiences.**

### **General Grading Criteria for All Documents**

Every communication (written, oral, or digital) should have a thesis, address a clear audience, and indicate a purpose or significance for its message:

**90-100? A / A-** Excellent writing, oral, or digital communication: the thesis, purpose statement, and significance is a well-supported, clear assertion that demonstrates sophisticated original thinking and goes beyond “stating the obvious.” The document, slide, or video format is effective and perfectly executed. The format may contain properly labeled, clever, unique, effective visuals, data, or other devices to carry the logic and create a targeted message for the intended audience; the organization is logical and easy to follow; paragraphs or segments begin with topic sentences and sentences are unified, developed, and effectively placed within the paragraph. Transitions between major elements of the message assist in developing the logic of the document’s message. Sentence structure is logical and rhetorically effective with superior use of transitions between sentences and paragraphs with a minimal number of minor errors in grammar, style, or format, and with a standard use of language and punctuation. The different aspects of the message (voice, person, tone, rhetorical strategy, etc.) all contribute to and support the writer’s main purpose; research and references are incorporated smoothly and effectively into the overall argument and are cited thoroughly and correctly throughout.

**80-89 B** Above average writing, oral, or digital communication: the thesis, purpose statement and significance is an arguable assertion and is generally well supported. The organization is soundly logical, contains effective transitions, effective visuals and other devices to convey the message to the audience, and is easy to follow; paragraphs or segments are generally unified and developed, but may lack the sophistication or maturity of vocabulary found in “A” quality writing. Sentence structure is thorough, complete, logical and rhetorically effective with good transitions between sentences and paragraphs or segments; the communication overall is strong with, for example, some very minor errors in usage, grammar, or style that do not affect comprehension. The message format is effective and perfectly executed. References are used effectively, cited properly and free of any errors of information or format.

**70-79 C** Average writing , oral, or digital communication: the thesis, purpose statement and significance is an arguable assertion that is overly broad and/or predictable. The organizational scheme has an overall logic but is not executed effectively; paragraphs or segments have problems with focus, unity, and development with minimal transitions. The message overall is just acceptable, but contains assorted errors in grammar, vocabulary, citations, phrasing, transitions, or style that affect the quality of the message or comprehension; sentence structure is adequate but lacking in thematic focus and specificity. References to research may be awkwardly introduced or contain defective in-text citation. The References list is correctly and completely formed.

Writing below a C should be considered in need of urgent correction for communication at the graduate level.

### **Writing Center**

All members of the OSU community are invited to discuss their writing with a trained consultant at the **Writing Center**. Please visit <https://cstw.osu.edu/writing-center> to make an appointment. Graduate students are encouraged to join a Writing Center Graduate Writing Group.

- Tutors will offer guidance and suggestions, but tutors will not edit and proofread your papers for you.

### **Help with Research**

The writing center offers a special research tutor who can help you refine searches, incorporate material into your text, and cite the borrowed material effectively.

### **Additional Resource for Writing Help**

#### **Grammar Review:**

<http://grammar.ccc.commnet.edu/grammar/index.htm>

#### **Extra Help for APA Citation Format:**

<https://owl.english.purdue.edu/owl/section/2/10/>

### **Academic Misconduct and Plagiarism**

“It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Professors shall report all instances of alleged academic

misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>

## **Disabilities**

The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's [request process](#), managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

SLDS contact information: [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; [slds.osu.edu](http://slds.osu.edu); 098 Baker Hall, 113 W. 12th Avenue.