Course Syllabus

Syllabus and Schedule for FISH 290: Scientific Writing and Communication

Class meeting times: Tuesday and Thursday, 2:30-3:50pm

Course Instructor: Dr. Luke Tornabene

Contact: ltorna1@uw.edu

Office hours: Fridays 1:00 pm

Required Reading: You are not required to purchase a textbook for this course. I will provide PDFs of all required reading on Canvas.

Recommended Reading: Consider purchasing a handbook on scientific writing for your own reference. This will be a useful resource throughout your education and career, especially as you advance. Here are some good options (not an exhaustive list):


Description and Learning Objectives: This class is designed to teach undergraduate students in the School of Aquatic and Fishery Sciences to:

- Gather published and unpublished sources of information and bring them to bear on scientific questions
- Critically read scientific literature
- Access electronic sources of information, including but not limited to internet searches, library databases, and public information and data
- Examine and evaluate the structure and functions of different components of scientific papers to effectively communicate scientific findings
- Understand and demonstrate techniques for effective communication of scientific information in papers, oral and poster presentations
- Evaluate and apply the ethics associated with scientific communication

Structure of the course: The majority of your grade for this class is based on three major projects: a paper, an oral presentation, and a poster. We will work on these projects continuously throughout the quarter, beginning the first week. There will also
be some small assignments for which completion and participation will be expected. I will check in on your progress weekly.

- The paper and oral presentation are both based on a simple but sound question posed by you, refined into a testable hypothesis, and then pursued with appropriate collection of data. Your study will then be described in a paper in scientific format, and in an oral presentation to the class at a mini-symposium at the end of the course.
- In addition to your own project, you will select one paper published in a scientific journal that will be dissected and examined closely throughout the course and presented to the class as a poster.

**Basis for grading:**

1. **Participation and small assignments (20%)**: In-person attendance is required to participate in class activities. Participation is necessary for your own learning and to help others learn (e.g. discussion and peer editing). If you attend class and do the in-class activity, you will get full credit.
2. **Poster presentation (20%)**: You will choose an existing scientific paper and present the material in the format of a poster, as if for a scientific meeting.
3. **Oral presentation (20%)**: Early in the course you will decide on a scientific question. You will then find an appropriate dataset and analyze those data to answer your question. You will present the findings of your study in both oral and written format. The oral presentation is structured as if for a scientific meeting.
4. **Written paper (40%)**: You will write the results of your study in the format of a scientific paper, including figures and tables.

**Attendance:**

1. Attending class in person is absolutely critical because of the nature of the class assignments (peer review, instructor feedback).

2. If you have to miss a class, you must do any in-class activities on your own. You are responsible for any assignments due on that day, regardless of your attendance.

**Important dates:**

- February 16th: Poster presentations
- March 7-9th: Oral presentations
- March 9th: Final paper due
- March 14th: Final exam day - no exam but reserved for any leftover oral presentations
Please let me know as soon as possible if you will not be able to attend class on these dates. Participation on these dates is mandatory except in the event of an extreme emergency or excusable absence as defined by the university and discussed with me in advance.

Class lecture schedule and assignments

***This plan should be treated as a living document and details may be revised as we move along.

Week 1: Tuesday March 26

Topic: The purpose of communication in science, goals of the class, basis for grades, expectations.

Activities in class:

1. A round of self-introductions: Why I am here, why this class exists, why you are here, and what you hope to learn.
2. Class goals, organization, expectations, grades, etc.
3. Brief, ungraded, in-class writing activity

Assignment due next class (Jan 5):

Formulate a question about some aspect of the natural world. Suggestion: go to a park, beach, etc, watch your pets, surf the web, sit on the sidewalk and stare into space, wait for inspiration while riding your bike, read about your favorite aquatic organism. Get an idea (any idea, multiple ideas). Bring the idea or question to the next class period and be prepared to talk about it. We will refine the question into one or a series of hypotheses that can be tested. The choice of project is really important, because this idea will be the basis for one of two major assignments in the class. You will collect data to test it, write a paper about the project, and present it to the class in pieces and as a whole.

Thursday March 28

Topic: The scientific method

Activities in class:
1. Let’s hear your ideas: What did you come up with, and how?
2. How do scientists do their work? Variations on the process
3. Begin to **look for data sources** you can use to test a question related to your topic

**Assignments due next class (April 2)**

- Begin to **look for data sources** you can use to test a question related to your topic
- Continue thinking about your question and make it more focused. After thinking about sources of data and potential limitations, **write down your more focused question** and hypotheses and be prepared to share next class.
- **Complete two short readings** (see Canvas): “Science writing as storytelling” and “Reading scientific papers”. We will discuss these.

**Week 1 Check In:** no need to send me anything unless you would like feedback or advice on your topic. We will check in during class.

**Week 2: Tuesday April 2**

**Topic:** Peer review

**Activities in class:**

1. Discuss your ideas and data/references you found for your project. Was it challenging to find information? Can we refine your questions even further?
2. Consider the process of peer review - how is science published.

**Assignments:**

1. Write down a set of hypotheses (H-null and H-alternative) for your project.

**Thursday April 4**

**Topic:** Finding Scientific literature

**Activities in class:**

1. Overview of UW libraries and research guides
2. Search for articles related to your research topic.

**Assignment for next class:**

1. Find 5 articles related to your research topic and put the PDFs in Google Drive
2. Find 1 article that you would like to do a **poster** presentation on. Put it in the same google drive folder but with the word "POSTER" as the first word of the file name. **Read the paper and come prepared Tuesday to share the topic of the paper** to the class.

**Week 3 – Tuesday April 9**

**Topic:** Structure of a scientific paper: how to read one and how to write one.

**Activities in class:**

1. Update – 1 minute sharing of poster papers
2. Learn the structure and function of a scientific paper
3. Consider the special role of the Introduction
4. Examine the papers that students chose. How are they similar and different?
5. The 5 pivotal paragraphs

**Assignment:**

1. Find the 5 pivotal paragraphs of the paper you chose to do your poster on. Using these 5 paragraphs as a guide, boil down the entire paper into a 1-minute talk. We will share these (and time these) at the start of Thursday's class.

**Week 3 Thursday - April 11**

**Topic:** Introductions

**Activities in class:**

1. Share your poster papers in 1 minute!
2. Learn the structure and function of a scientific paper's Introduction.
3. FIND DATA!

**Assignments after class:**

1. Examine "mock introductions" and see if we can improve them. Take the file with the class's practice Introductions and edit them using the track-changes mode in MS Word. Save both a version with track changes and a version that has been cleaned up (i.e., accept all changes) so you can see the difference. Submit the version with the changes tracked on Canvas.

2. Read the introduction from the Orejas et al. (2016) paper on canvas. Create an outline (bullet points with short sentences) from that paper, showing how the authors guide us through the background introduction towards their objectives. Submit that outline on Canvas.
**Week 4 - Tuesday April 16**

**Topic:** Describing our methods

**Activities in class:**

1. Discuss the purpose and structure of the Materials and Methods section
2. Examine the Materials and Methods sections of the papers that students chose. How are they similar and different? What works and what does not?
3. Spend time finding data that will help you write your materials and methods section.
4. **BY THE END OF CLASS TODAY YOU WILL NEED YOUR DATA IN HAND, READY TO ANALYZE**

**Assignment for Thursday:**

1. Work on your introduction. It is due at the end of the week. Please do not show up with nothing on Thursday.

**Week 4 - Thursday April 18**

**Topic:** Writing session

**Activities in class:**

1. Spend the day working on your Introduction section and methods.

**Assignment:**

1. Finish a *complete draft* of the Introduction of your own paper, even if it's rough.
2. Start a draft of your methods section.

**Week 4 check-in (by Saturday mid-night):** Submit via canvas what you have so far for your Introduction and Methods. At this point I expect your Introduction to be complete (even if rough), and your Methods to be started but not necessarily complete.

**Week 5 - Tuesday April 23**

**Topic:** Describing results: Figures

**Activities:**
1. When to use a figure, table, or neither
2. How to make effective figures
3. Continue data analysis on your project

Assignment:

1. Begin the draft of the Results section for your own paper. Start with what you know- we can add additional statistical analyses on Thursday.

Thursday April 25
Topic: Results: Tables and captions
Activities:

1. How to make effective tables and captions
2. Continue data analysis on your project

Assignment:

1. Continue to work on data analysis.

Week 5 check-in: Email me at least one figure or table with its caption.

Week 6 Tuesday April 30
Topic: Results: Text and interpretation
Activities:

1. How to write the Results section
2. Examine “mock” results sections
3. How to interpret non-significant results

Assignment:

1. Continue working on your Results sections, figures and tables
2. Find a poster in the buildings around UW. Take a picture and send to me.

Thursday May 2
Topic: All about posters
Activities:

1. Introduction to posters and poster presentations
2. Begin working on a poster for your published paper

Assignments:

1. Begin working on your poster

**Week 6 check-in:** Email me all you have on your paper so far. At this point I expect you to have at least an outline of the Introduction, Methods, and Results, as well as at least one figure or table. **Remember that the poster session is next Thursday!!**

**Week 7 Tuesday May 7**

**Topic:** The Discussion section

**Activities:**

1. How to write the Discussion section
2. Dealing with research limitations

**Assignments:**

1. Continue working on your poster. **Poster session Thursday!!**
2. Begin the Discussion section of your paper.

**Thursday May 9**

**Poster session!!**

1. Email me your presentation-ready poster file by 12:00pm today.
2. Each of you will present your poster describing the publication you have been studying, allowing us to examine it, and ask questions. **Do not print your posters- we will display on screen.**
3. During other presentations, please take careful notes to provide feedback to each presenter. Please send your comments to me and I will forward them anonymously.

**Week 7 check-in:** See directions above about sending me your poster.

**Week 8 Tuesday May 14**
Topic: Writing an abstract

Activities:

1. Consider the function and structure of the abstract
2. Tips for writing the abstract
3. In-class work on abstracts

Assignment: Write the abstract of your paper. Be ready for peer-edits of abstracts on Thursday.

Thursday May 16

WORK ON PAPERS

Week 8 check-in: Email me a complete first draft of your paper. I expect all sections to be completed (not an outline or bullet points), even if it's rough.

Week 9 Tuesday May 21

Topic: All about oral presentations

Activities:

1. General principles of oral presentations
2. Begin In-class work on Powerpoint presentations
3. Assign peer-editing buddies

Assignment: Peer-editing of student's first paper drafts (see checklist)

Thursday May 23

Topic: Editing part 1: Structure

Activities:

1. Integrating the elements into a coherent paper
2. Work on presentations
Week 9 check-in: Send me your edits of your peer’s paper with track changes.

Week 10 Tuesday May 28th
Editing Part 2: Brevity
Activities:

1. The importance of brevity
2. How to cut
3. In-class work on papers/powerpoint presentations

Assignment: Continue working on your oral presentations. Continue polishing your paper with peer edits.

Thursday May 30th (last day of class!)

Final paper due! E-mail me a MS Word file with your research paper by 11:59 PM. Use the file naming format "lastname firstname 290 paper.doc".

Oral presentations!!
E-mail me the ppt file by 9:00 AM Tuesday so I can load it. The talk order will random so be prepared to present. Each of you will give an oral presentation of your research project, strictly limited to 10 minutes. Double-check before sending it, and use the file naming format "lastname firstname 290 presentation.ppt".

Final Exam: Tuesday June 4th 4:30-6:20pm
There is no final exam. Instead, we will allocate this time to finish whatever presentations we did not have time for during the last week of class.