

Course Syllabus

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Goals: This class is designed to teach undergraduate students in the School of Aquatic and Fishery Sciences to 1) gather published and unpublished sources of information and bring them to bear on scientific questions, 2) critically read scientific writing, 3) access electronic sources of information, including but not limited to internet searches, library databases, and public information and data, 4) learn the structure and functions of different components of scientific papers to effectively communicate scientific findings, 5) learn techniques for effective communication of scientific information in papers, oral and poster presentations, 6) understand the ethical boundaries associated with scientific communication. These goals will be achieved in class that calls for creativity and collaboration.

Format: The class will emphasize fundamental principles of communication, presented in lecture format, and reinforced by 1) examination of writing published by professionals, 2) in-class editing of “mock” examples of papers, 3) frequent small assignments, 4) in-class discussions, 5) completion of a paper based on sampling designed and carried out by each student, 5) an oral presentation, and 6) a poster presentation.

Structure: The class will be built around two parallel assignments, both based on a scientific study chosen by each student. One will be the selection and careful examination of a paper published in a professional journal, and the other will be an original research project designed by the student.

Basis for grading the course: The grades for this class will be determined largely on the basis of three major projects: a paper, an oral presentation, and a poster. The papers and oral presentations will be based on simple but sound questions posed by each student, refined into a testable hypothesis, and then pursued with appropriate collection of data. The study will 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 this project, each student will select paper published in a scientific journal that will be dissected and examined closely throughout the course, and presented to the class at the end of the course as a poster, as might be made for a scientific meeting. These three assignments will constitute the majority of the grade for the course but there will be several small assignments for which completion and participation will be expected.

1. Participation and small assignments throughout the quarter (15%)
3. Oral presentation (20%)
4. Poster (30%)
5. Written paper (35%)

Class lecture schedule and assignments

Week 1: Wednesday September 26

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

Activities:

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

Assignment:

Formulate a question about some aspect of the natural world. Suggestion: go to a park, beach, zoo, watch your pets, surf the web, sit in a coffeehouse and stare into space, wait for inspiration while riding your bike. Get an idea. 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.

Reading: Obtain the book, get familiar with it in a general way, and read the Introduction.

Week 2: Monday October 1

Topic: The scientific method

Activities:

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. Where do we find scientific information?

Assignment:

Re-think your question, change it if needed, and bring a more focused question to the next class session. Find a website with data that pertains in some way to the topic. Go to the library and check out a book (a real book, made with paper!) that is relevant to your topic and bring it to class.

Reading: Chapter 1, pages 5-26.

Week 2: Wednesday October 3

Topic: Getting the headline right: titles of journals and articles

Activities:

1. Consider the range of journals where SAFS faculty and students (for example) publish, and which they need to read.
2. We are all busy people, so how do we decide what journals to read, and what papers to read in the journals?
3. Look over the list and rate the journals as “not likely to read”, “might read if I had time”, and “would be most likely to read”. We will assemble the data.
4. Then, you will look at the table of contents of your chosen journal, and pick a paper that most interests you. Choose wisely, and be prepared to tell us why that paper caught your eye.

Assignments

- 1: Come to class prepared to present a short (2-minute) summary of what you intend to do for your individual project. What is your question, and how will you address it?
2. Look at recent (or long-past) issues of your chosen journal, scan the titles, and choose a single article. This choice is very important. You will read that article closely, write about it, tease it apart, present it to the class, and in other ways make it a focal part of your experience in this course.

Please e-mail me a pdf copy of the paper, with your name as part of the file name.

Week 3 Monday October 8

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

Activities:

1. Update – did everyone pick a journal and paper? Discussion of choices
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. Presentations by students of the objectives of their studies.

Assignment:

Read your chosen paper again, from the perspective of what we have learned. Be prepared to tell the class, **in one minute**, what it is all about. Paradoxically, it is harder to say something in such a short period of time than it is to speak for a longer time. So, practice!

Week 3 Wednesday October 10

Topic: Developing an Introduction

Activities:

1. Learn the structure and function of a scientific paper's Introduction.
2. Examine the Introductions of the papers that students chose. How are they similar and different? What works and what does not?
3. Examine "mock introductions" and see if we can improve them.
4. Presentations by students of the objectives of their chosen papers.

Assignments:

1. Write a carefully crafted statement of the objectives for **your own study**, as would constitute the last paragraph of your Introduction. Express both the overall goal and the specific hypothesis. Choose your words carefully; try to be precise and quantitative and predictive.

E-mail it to me as a file in MS Word, using your name and "Introduction" (e.g., "Smith Introduction.doc").

2. Come to class prepared to give a 1-minute statement of the objectives of **your selected published paper**.

Week 4 Monday October 15

Topic: Objectives and hypotheses

Activities:

1. Examine the Introductions of papers written by students in past classes.
2. In-class writing: draft the Introduction of your paper.
3. Presentations of the Introductions of each student's paper (1-minute each).

Assignment:

- 1) Take the file with 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. E-mail me the version with the changes tracked.
- 2) Work on the Introduction of your own paper.

Week 4 Wednesday October 17

Topic: Describing our methods

Activities:

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. Presentations by students of the methods of their study.
4. In-class work: Take “mock methods” and improve them

Assignment:

- 1) Draft the Methods section of your paper, using your published paper to guide you.

Reading: Pages 71 – 76 in the book.

Week 5 Monday October 22

Topic: References and ethics in writing

Activities:

- 1) Review the data on patterns in number of authors
- 2) Discuss what it means to be an author
- 3) Consider the ways that we reference work by others
- 4) In-class editing of references
- 5) Consider ethical matters: plagiarism

Week 5 Wednesday October 24

Topic: Results: Focus on figures and tables

Activities:

- 1) Discuss how to integrate text, figures and tables into coherent results
- 2) Examine published papers
- 3) Examine “mock” figures and tables
- 4) Excel: making and modifying simple figures

Reading: Sections of the book pertaining to Results and Figures

Assignment: Choose one figure from your published paper to share with the class. We will look at them and critique in class next week. Keep working on Results.

Week 6 Mon Oct 29

Topic: Describing results: Focus on text

Activities:

1. Share figures from your papers and discuss the results - How are they similar and different? What works and what does not?
2. Discuss the Results section and the ways to present results
3. A bit about statistical inference, as it is commonly described in scientific papers
4. Take “mock results” and improve them: group editing.

In-class writing: Draft a version of your Results section

- 2) Working on Results sections: text, tables and figures

Assignment:

- 1) Continue working on the draft of the Results section for your own paper. Try to get a complete, rough draft of the whole section DUE WED OCT 31. We can polish it later. How long should it be? Avoid the mistake of writing to a pre-determined length (e.g., a 20-page paper). It should be as short as possible while still being complete.

Reading: Sections of the book pertaining to Discussion

Activities:

Assignment:

- 1) Plan your paper’s Discussion.
- 2) Study the Discussion in the published paper.

Reading: Read pages 81 – 84 in the book.

Week 6 Wed Oct 31

Topic: Writing, editing, and posters

Assignment:

Poster presentations in class next Wednesday. E-mail them to me and grad students in advance (Tuesday midnight deadline)

Week 7 Monday November 5 –

Topic: Discussing results

Activities:

- 1) Consider the structure of the Discussion section
- 2) Some basic hints and things to avoid
- 3) Examination of the Discussions in published papers
- 5) Wrap-up and assignments

Assignments:

- 1) Work on your poster.
- 2) Work on your papers – Draft a Discussion section for Next Wednesday (Nov 14) – Due before class

Reading: Read pages 201-209 in the book.

Week 7 Wednesday November 7

Topic: Poster day!

Each of you will present your poster describing the publication you have been studying, allowing us to examine it, and ask questions. All of us will grade each one.

Please also take careful notes during each presentation to provide anonymous feedback to each presenter. Please send your comments to me and I will forward them.

Following any revisions, based on student comments, please e-mail me the final ppt file.

- 4) Why grammar matters: the comma
- 5) Time to work on posters

Week 8 Monday November 12 – VETERAN'S DAY**Week 8 Wednesday November 14 – Peer Editing Day****Activities:**

- 1) Cutting jargon and useless verbiage
- 2) Peer editing of Discussion text
- 3) Student in-class writing

Week 9 Monday November 19

Topic: Developing skills for an oral presentation

Activities:

1. General principles of oral presentations
2. In-class work on Powerpoint presentations

Assignment: Read section about Abstracts in book

Week 9 Wednesday November 21

Topic: Writing an abstract

Activities:

- 1) Consider the function and structure of the abstract
- 2) Tips for writing the abstract
- 3) Keywords
- 4) Examine the abstracts in published papers and mock papers
- 5) In-class work on abstracts

Assignment:

- 1) Start gathering the pieces of your paper and putting them into a cohesive document. Work on flow.
- 2) Re-examine your title – does it still look good?

Week 10 Monday November 26

Topic: Putting it all together

Activities:

- 2) Integrating the elements into a coherent paper
- 3) More on grammar and word use
- 4) In-class work on papers

Assignment: Apply these hints and go over your paper carefully, polish the writing, check the tables and figures, and make it as good as you can.

Reading: Chapter 8 in the book, pages 144 – 171.

Week 10 Wednesday November 28

Topic: Putting it all together

Activities:

- 1) Polishing papers: British spelling and Latin expressions
- 2) Work on your papers
- 3) Exchange sections with your fellow students – this is your time to POLISH!
- 4) Seek help with tables, figures, and anything else that needs doing.

Assignment:

Come to class ready to work on the oral presentation that you will do, based on your own research project. Have some rough graphs, text, ideas, etc. We will polish them but you have to bring something to class to get something out of this.

Reading: Pages 191-201 in the book.

Week 11 Monday and Wednesday December 3 and 5

Review of the end of class and the last major assignments, both due on the last week of class:

- 1) Monday and Wednesday: each of you will give an oral presentation of your research project, strictly limited to 10 minutes. E-mail me the ppt file by 9:00 AM Monday so I can load it. It will be random who gives the talk each day so be prepared for Monday. Double-check before sending it, and use the file naming format "lastname firstname 290 presentation.ppt".
- 2) Wednesday: E-mail me a MS Word file with your research paper by 9:00 AM Wednesday. Double-check before sending it, and use the file naming format "lastname firstname 290 paper.doc".

Topic: Oral presentation

Activities: Students each present their original research papers to the class.

Final Exam Week:

During exam time, we will finish whatever presentations did not get presented during the last day of class. Attendance is mandatory.

Course Summary:

Date

Details
