Biochemistry 460, Fall 2021, Syllabus

Time: Tuesday and Thursday, 3:30-4:50 P.M. 100 Noyes Laboratory
Course Delivery: Class will be delivered in person in 100 Noyes Lab. This is a
large lecture room with lots of space to achieve physical separation from others.
We will also be recording the talks by Zoom as they are presented. Zoom quality from
this environment will not be outstanding. The expectation is that students will attend
in person. In some classes, for part of the class, students normally will break into small
groups or teams to review each others work and discuss how to best present
information and research. This small group work to edit and improve your written work
was a significant part of the class. Last year we did this via Zoom with me moving
remotely between the groups and it was imperfect. How we will implement this will
depend on where the campus community is as the semester unfolds. (Before SARS-
CoV-2 the course was delivered in 419 RAL. Unlike classrooms, this room has movable
Tables and chairs that facilitate small group work. Because the room was packed, it can
no longer be used to deliver the course. For our safety, this course, and many others,
will be delivered in a much larger classroom, enabling students to distance themselves
from each other.)

TEXTS: There are no required tests

Highly Recommended
Angelika H. Hofmann. Scientific Writing and Communication: Papers, Proposals and
Presentations
Advantages
Prof Hofmann teaches Yale’s scientific writing course, knows the topic
Many examples; shows how to improve poor writing
List of strong and weak ways to make certain kinds of common statements in papers
Disadvantages
Dense
Writing is clear, but not especially interesting to read.
Sections on giving presentations and preparing posters are weaker than the sections on
writing papers.

Recommended

Stephen A. Heard. The Scientists Guide to Writing: How to Write More Easily and
Effectively Throughout your Scientific Career.
Inexpensive
Advantages
Very strong user reviews on Amazon.
Easier to read than Hofmann but less comprehensive
Has a fair number of examples
Goes through the entire process from start to reading reviewers comments
Disadvantages
Easy chatty style means it sometimes takes longer to get to the actual material you need.

Joshua Schimel. Writing Science: How to Write Papers that Get Cited and Proposals that Get Funded.
Advantages
Big Picture
Highly readable
High purchaser ratings on Amazon: 4.7/5
Disadvantages
May not be specific enough for a beginning student

More Specialized

Hilars Glasman-Deal. Science Writing for Non-native Speakers of English
Very strong user reviews on Amazon: 4.7/5 22

PhraseBook for Writing Papers and Research in English
Stephen Howe and Kristina Henriksson
Solid reviews; There are specific issues that come up in many papers and reader-friendly phrases that address these issues and make papers much easier to follow.

This class does NOT closely mirror the chapter-by-chapter content of these books.

Instructor: Professor David Shapiro
Office Hours: I and the T.A.s will have office hours. These are expected to be in person during specific times. At this time, each of us will be wearing a good quality mask. For more intensive meetings with the T.A.s later in the semester, where it is not easy to maintain distance, our expectation is that everyone will have received a negative test the day before their 1-hour meeting with the T.A.
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Specific meeting times will be scheduled for going over the draft of the journal article.
Prerequisites: MCB354, MCB253 or Biochemistry 455 lab and completion of composition 1 requirement

Course Overview and Objectives: As research scientists, physicians and health professionals you will need to communicate your ideas, refine your thoughts and be able to discuss them, and constructively criticize and interact with others. As physicians and health professionals, you will need to process information provided by patients and clinical tests, use that information to formulate a diagnosis and treatment plan and communicate clearly and effectively with patients and health care team professionals. This course is designed to give you the opportunities to explore these areas and help you develop and refine your skills. The focus is primarily on scientific writing for scientists and for non-scientists.

The course is structured with a lecture/discussion of a topic in scientific writing. Often, the students will write material related to that topic, distribute it to their group, and then hopefully be able to critique each other’s writing in small groups with overall guidance from the instructor. Notably, The School of Molecular and Cellular Biology is implementing a required scientific writing course for graduate students.

What we will do this semester:

RESEARCH JOURNAL ARTICLE
The major writing task is writing a journal article. We provide real current experimental data that the researchers expect to ultimately submit for publication. Lectures provide scientific background and context for the topic and guidance for writing each section of the manuscript. You will use this information to produce figures and write a scientific paper. As you write each section of the manuscript it will be refined in discussions with other students. Based on student input we require that students also submit the sections of the manuscript that are being critiqued. If the student has made a sincere effort to write the section due for small group discussion that week, it will be deemed satisfactory. The initial draft is handed in and reviewed and graded by the teaching assistants who will then meet with each of you remotely and provide one-on-one guidance and suggestions for ways to improve the final draft of the manuscript. (An alternative approach in which each student writes a grant proposal is not practical. Quite a few students in the class are not presently working in a research lab; this would put them at a major disadvantage in writing a grant based on their research.)

In Chronologic Order

PERSONAL LETTER
A description of your background and what you hope to gain from the class. Because this contains personal information, it will graded by the instructors and will NOT be reviewed in the small groups.

WATSON-CRICK ABSTRACT
The classic Nature papers describing the structure of DNA do not contain an abstract. We will discuss how to write compelling, attention-getting abstracts and you will write a
single Abstract covering both of these papers. Your abstract will be refined in small group discussions and you will also read and critique the Abstracts of others. A few of your Abstracts will be read in class.

GRANT PROPOSAL ABSTRACTS
We will provide a grant proposal without the Abstracts. You will use that proposal to prepare a Technical Abstract for research scientists and a Public or Lay Abstract for non-specialists.

RESEARCH JOURNAL ARTICLE
Sections
Graded Draft
Final Manuscript with Press Release for your Journal Article

GRADING
1. Personal Letter 2
2. Watson-Crick Paper Abstract 6
3A. Grant: Technical Abstract 6
3B Grant: Public Abstract 6
4A. Journal Article, Assignments S/U - (If U, lower grade for participation)
4B Journal Article, Draft 11
4C Journal Article, Final 52
4D Press Release for Journal Article 8
5. Class Participation 9

Ungraded: Reviewing Hall Posters. We will try to work out a way to do this safely. In the past we did this in small groups. This year we will need to do more to stagger times so each of you can maintain physical separation from classmates and others in the corridors.

It’s a lot for all of us to deal with, but there are no written exams.

GRADING WRITING
The answer to a True-False or multiple choice question is normally either correct or incorrect. Grading writing is more nuanced and, in part, comes from how the various elements of a document come together. It is therefore nearly impossible to provide a detailed explanation for why something is graded as 8, rather than 8.5. We recognize that you are not experienced writers and will grade accordingly.

We will provide more details on how your writing is graded later this semester.

SUBMITTING WRITING ASSIGNMENTS

PRELIMINARY CLASS SCHEDULE
There will probably be one or two guest lectures in person or by Zoom. Dates TBD
Past guest lecturers
Diana Yates. Life Sciences Editor, UIUC News Bureau

Week 1. Aug. 24 and 26
Jeff Goldberg
Schedule and Course Overview
Types of scientific communication

ASSIGNMENT 1: PERSONAL LETTER DUE BY 5 P.M., Tuesday Aug. 31

Week 2. Aug. 31 and Sep. 2
Class Discussion of Gopen and Swan
Common errors and problems in scientific writing
Writing Abstract’s for manuscripts
Nature’s overview of how to create a compelling short abstract
Short descriptive abstracts in high profile papers

ASSIGNMENT 2: DRAFT OF WATSON-CRICK ABSTRACT (<100 WORDS), ABSTRACT DUE FOR YOUR PANEL BY 5 P.M. WED SEP. 1

Discussion of your Abstracts in small groups on Thursday SEP. 2. (During part of the class time)

Week 3. Sep. 7 and 9

ASSIGNMENT 2: WATSON-CRICK ABSTRACTS (maximum of 100 words) DUE BY 11:59 P.M. Sat, Sep. 4.

Overview of grant proposal contents
Technical Abstracts:
A mini-grant in one page.
Balancing details about goals with the big picture of why the reader should care
Public Abstracts:
Writing for the informed public and non-specialist Researchers. Keeping specialist readers, patients, and non-specialists engaged.
Replacing jargon in the abstract.
**Week 4. Sep. 14 and 16**
How to engender reader enthusiasm for grant abstracts
Grant review process
Guest lecture

**ASSIGNMENT 3A:** Draft of Technical Abstract due for small team by 5 P.M., Wednesday, Sep. 15
**ASSIGNMENT 3B:** Draft of Public Abstract due for small team by 5 P.M., Monday Sep. 20.

**Week 5. Sep. 21 and 23**

**ASSIGNMENT 3A AND 3B TECHNICAL AND PUBLIC ABSTRACTS DUE BY 11:59 P.M. SATURDAY, SEP. 25**

Longer JBC/Biochemistry-style abstracts that contain more experimental results; usually 150-250 words.
Evolution of an actual Abstract though several drafts
In small panels and in full class
Overview of research article expectations
Organizing information for a research article
Background and information for the research article
Data for the research article

**Week 6. Sep. 28 and 30**

Organizing data in figures
Outlining the main themes of the paper
Format and section content, Titles
Highlights and One-line descriptors
Common problems in scientific writing
Strategies for a strong Introduction

**ASSIGNMENT 4A RESEARCH ARTICLE:** Drafts of Figures to your team Wednesday, Sep. 29, 5 P.M., for review ON Thursday Sep. 30

**Week 7. Oct. 5 and 7**

**ASSIGNMENT 4A RESEARCH ARTICLE:** BY 11:59 P.M., Monday Oct. 4
Draft of Title, brief one-line descriptors and Introduction to small panel for review.

Preparing figures, doing calculations, presenting data, Tables graphs etc.
Writing the Results, Organizing the results so they experiments flow logically and you say what you intended to say.
Discussion. Don’t just repeat the results
Identifying how the findings fit into the larger scheme.
How do these data relate to prior knowledge?

Week 8. Oct. 12 and 14

**ASSIGNMENT 4A RESEARCH ARTICLE:** Sunday, Oct. 10, 11:59 P.M. Draft of Experimental Procedures (Materials and Methods) and Results with Figures to small team for review.

Finding things to discuss when you are not an expert in the field
A Discussion that does more than go over the data
References and literature searches

Week 9. Oct. 19 and 21

**ASSIGNMENT 4A RESEARCH ARTICLE:** Sunday, Oct. 17 11:59 P.M. Draft of Discussion to small team

Guest lecture
Assembling a finished manuscript
Writing for the informed general public

Week 10. Oct. 26 and 28

**ASSIGNMENT 4A RESEARCH ARTICLE:** Sunday, Oct. 24 11:59 P.M. Draft of complete manuscript including Title, Descriptors, Abstract, Introduction, Methods, Figures and Figure legends, Results, Discussion to small team.

Week 11. Nov. 2 and 4

Going from your research paper to a press release
Evolution of two press releases
Writing compelling abstracts for meetings
Keys to effective presentations

**ASSIGNMENT 4B RESEARCH ARTICLE:** DRAFT DUE: Draft submitted for our grading and comments by 11:59 P.M, Monday, Nov. 1

Week 12. Nov. 9 and 11

**NO CLASS, INDIVIDUAL MEETINGS WITH TAs TO GO OVER YOUR DRAFTS**
(Be sure to sign up for an appointment)
Week 13. Nov. 16 and 18.
How to organize a poster
Turning your research paper into a poster
Rating the 3rd and 4th floor posters
(This will have to be done in a staggered way so that students do not congregate at posters. It will likely extend beyond class hours. Currently, this is in person in RAL. This is NOT graded. If you are not on-campus, or are concerned about safety you are not required to participate. There will be no penalty. Alternatively, we are looking into supplying the posters to you electronically. But this does not resemble how you would see them in person at a scientific meeting.

Week Nov. 23 and 25
Fall Thanksgiving break, no classes

Week 14. Nov. 30 and Dec. 2
Common writing problems that emerged, your suggestions for improvement


Week 15. Dec. 7
Having trouble with your Discussion, some possible topics
Course overview, your suggestions for improvement

ASSIGNMENTS 4C and 4D RESEARCH ARTICLE: FINAL MANUSCRIPT AND PRESS RELEASE
DUE Date is: 11:59 P.M. Wed., DEC. 15.

This is the last date we can properly receive the your papers and be able to grade them in time to give out final semester grades.