

**BIOLOGY 3396—Writing for Biology
SPRING 2016**

Class Schedule: Tuesdays and Thursdays 2:00 PM – 3:20 PM, Bio Life (BL) 237

Instructor: Deb Stull, PhD

Office: BL248C (opposite the Biology main office)

Office phone: 1-6140 (on campus); 215-204-6140 (off campus)

Home phone: 215-793-4344 (but please, no calls after 9—I'm not as young as I used to be!)

E-mail: debstull@temple.edu

Office hours: Wednesdays, 9:00 AM –12:00 PM or by appointment

Pre-requisites: *Cell Structure and Function* (Biol 3096) or *Genetics* (Biol 2296).

Required Texts

- There is no required text for this course—all materials (including the articles listed for the long-term project) will be posted on Blackboard (out-of-class assignments) or in class (in-class exercises).
- There are a number of texts that I strongly recommend that you consult while working on your long-term project and presentation. They are available at Paley Library.
 - Alley M. *The Craft of Scientific Writing*. 3rd ed. New York, NY: Springer-Verlag New York, LLC; 2008.
 - Alley M. *The Craft of Scientific Presentations*. 1st ed. New York, NY: Springer-Verlag New York, LLC; 2003.

Suggested Resources

The Internet offers a wide selection of writing resources, both specifically for science writers and for writers in general. Here is a list of some you may want to consult throughout the course. You will definitely want to check these out—remember, your writing will be evaluated on style as well as on content!

- Writing Guidelines for Engineering and Science Students. Available at: <http://www.writing.eng.vt.edu/>.
- UW-Madison Writing Center. Available at: <http://www.wisc.edu/writing/Handbook/ScienceReport.html>.
- Hypergrammar. Available at: <http://www.uottawa.ca/academic/arts/writcent/hypergrammar/>.
- Guide to Grammar and Style. Available at: <http://andromeda.rutgers.edu/~jlynch/Writing/>.
- Guide to Grammar and Writing. Available at: <http://grammar.ccc.commnet.edu/grammar/>.
- The Elements of Style. Available at: <http://www.bartleby.com/141/index.html>.
- Roget's Thesaurus. Available at: http://humanities.uchicago.edu/orgs/ARTFL/forms_unrest/ROGET.html.
- Guide to Grammar and Style. Available at: <http://newark.rutgers.edu/~jlynch/Writing/contents.html>.

Course Description

In this seminar course, we will address many aspects of the ever-broadening field of scientific writing. You will learn how to communicate scientific information in a clear and concise manner both in written and presentation (PowerPoint) formats. Although our focus will be on the development and refinement of a peer-reviewed primary research paper, we will also explore other forms of scientific writing and audiences, including a discussion of the various types of science writing (and some issues with them) in the pharmaceutical industry.

Writing exercises—both in class and out—will have you explore the genre of the research article and its components. In addition, you will develop your skills as writer, reviser, and editor by working with your peers and your instructor. Topics we will cover will include paper design (how to weave a story), graphics/table development, referencing, presentation creation, and editing strategies.

Course Objectives

By the end of this course, you should be able to:

1. Understand the components of a scientific paper and how they work together to tell a story
2. Write clearly and succinctly for both a scientific audience and the general public
3. Appreciate the importance of knowing your audience and purpose both in written pieces and in presentations
4. Find a variety of resources/sources and use them appropriately to tell a convincing scientific argument
5. Analyze data in a context of what is known in a given scientific area

Finally, it is my goal that you will enjoy this class and learn to like writing in general more!

Blackboard/Class Communications

Course announcements, assignments, and additional materials will be posted online using BlackBoard. Any updates to this syllabus will be posted on Blackboard; please check periodically.

You will also receive important course announcements via your Temple email account. If you do not use your Temple email account, you need to activate it. If you have forgotten your password, you need to go to Computing Services and have them assign you a new password. It is strongly recommended that you check your e-mail regularly. **We will definitely be communicating through e-mail (including submission of LTP sections), so it is absolutely critical that you check your e-mail frequently.**

You should also feel free to email me if you have any questions or problems (please include your full name in all email messages regarding this course)—I am on e-mail often. But please too feel free to call if you prefer a more personal communication. I am also available during the office hours listed above. If you would like to meet with me at another time, please don't hesitate to e-mail or to call, and we can schedule a time to meet.

Course Work/Format

Overall

We will meet twice a week. Classes may include lectures, discussions, in-class workshops, or any combinations thereof. We will discuss the content and form of scientific and technical writing with the goal of helping you develop a professional style that is correct, simple, and lucid. You will write regularly, and performance standards and expectations will be very high. Grades will be based on

scores on homework assignments, writing exercises (both in-class and out), class participation (see below for specifics), a final writing project, and a PowerPoint presentation. Details on expectations, format, and grading will be available for each writing assignment on Blackboard.

Because this is a writing course, please pay extra attention to spelling, grammar, and punctuation! We will be covering certain writing points that are specific to scientific writing in class, but I expect your work to be grammatically correct, proof-read, and spelled-checked. Also, unless told otherwise, all written work should be typed and double-spaced with page numbers. **PLEASE BRING IN 2 COPIES OF YOUR FIRST DRAFTS OF EACH SECTION OF YOUR LONG-TERM PROJECT TO CLASS WHEN EACH IS DUE; WE WILL BE DOING A LOT OF IN-CLASS REVISING/DISCUSSING.**

In-class activities/class participation

Because this is a writing course, **it is imperative that you attend class regularly**. On most days we will be doing in-class activities that are designed to walk you through the different aspects of writing for which you will then be responsible, so being there is critical. The purpose of these exercises is to help you hone your skills not only as writers but also as revisers and editors. In many ways writing is like working on experiments in the lab—you need to do/practice it in order to improve. Therefore, please realize that attending class is an integral (and graded!) section of this class. Please see below and grade sheet for the specifics.

Out-of-class writing (writing exercises)

You will also (obviously) be doing writing outside of class. This writing will primarily (exception: “other writing projects”) be focused on working through the different aspects of the writing process while writing drafts of your long-term project (see below). In addition to being responsible for writing 1 or 2 drafts of each section of your long-term project (depending on the section), you will also be responsible for completing written reviews of your classmates’ work outside of class (and remembering to bring them in on appointed days [see below and **assignment sheets** for specifics]).

Other writing projects

In addition to working on the drafts of your long-term project, you will also be working on 2 other writing assignments that will help you understand how to write for different audiences and purposes. Please see assignments for more information.

Long-term project

In addition to these activities/exercises, you will be asked to choose 1 on-going writing project. You will be turning in sections of this project throughout the course before you turn in the final project. You will be receiving feedback on this from both your peers and me; **please keep track of any feedback you receive because you will need to turn it in with your final paper as your portfolio**. You will be revising these sections based on instructor and peer feedback. Primary choices listed below.

1. **Mendel Paper:** Historically, scientific articles were written in a very different format than we use today. Specifically, they tend to be much longer. Your task here is to use selected data and related aspects of the experimental design from Mendel’s original paper to write a shortened, more contemporary scientific paper.*

Focusing only on his findings in pea plants that support the law of segregation (monohybrid crosses) and the law of independent assortment (dihybrid crosses), write a completely new (non-paraphrased) updated, contemporary paper. You should only use Mendel’s original

paper (well, the English translation) as a resource for the experimental design and data. Keep in mind too that Mendel did not know about chromosomes, genes, alleles, or DNA.

Mendel's original paper is over 40 pages long. Your final project should be about 15–20 **double-spaced** pages, depending on the number of figures and tables you include. ****But please don't get caught up in the number of pages! The purpose here is to write something that is clear and focused while containing the necessary details**** As mentioned above, revisions are a crucial part of the project—you will be receiving feedback on each section as the semester progresses. It will be your responsibility to incorporate this feedback and adjust the other sections to ensure that the final paper is coherent and flows from beginning to end. Please include a title page with your final draft. All tables and figures (which you will need to create) should be grouped at the end of the document.

2. **Oswald Avery paper:** It has been argued that Oswald Avery's original paper in which he describes his isolation of DNA as the "active principle" involved in transfer of genetic material is an example of a groundbreaking scientific finding that only reached a limited audience because, in large part, because of the way the paper was written (see S. Michael Halloran's essay, *The Birth of Molecular Biology*, for more information). According to Halloran, "[a] characteristic point of [the authors'] argumentative strategy is that the paper does not state its thesis in the introductory section and in fact does not even mention the substance DNA until roughly half-way through its 7500 word length." Halloran goes on to describe the paper as "rhetorically weak."

Using Avery et al's original data and experimental design, write a shorter, more persuasive, and more contemporary scientific paper. Refashion the presentation of the data in the 1944 Avery et al *Journal of Experimental Biology* article into a "rhetorically strong" article.

Like the first option, your final paper should be about 15–20 **double-spaced** pages, depending on the number of figures and tables you include. ****But please don't get caught up in the number of pages! The purpose here is to write something that is clear and focused while containing the necessary details**** As mentioned above, revisions are a crucial part of the project—you will be receiving feedback on each section as the semester progresses. It will be your responsibility to incorporate this feedback and adjust the other sections to ensure that the final paper is coherent and flows from beginning to end. Please include a title page with your final draft. All tables and figures (which you will need to create) should be grouped at the end of the document.

*If there is another classic, older paper you wish to rewrite instead, please check with the instructor. Appropriate alternate papers, for example, Thomas Hunt Morgan's work with fruit flies that led to linkage analysis, are fine. Key here though is that you come to me to discuss possible alternatives and have your choice approved BEFORE you begin to write.

Presentations

Although this is a writing course, oral communication in many ways follows the same rules and guidelines that writing does. For this reason, you will also be responsible for presenting a PowerPoint presentation to the class on a scientific topic on your choice. Of course, there are some rules here too: it must be a scientific topic, it must have data, etc. Again, see the assignment sheet for specifics.

Grading Overall

See below for more information. Also please see blank grade sheet and the assignment sheets for each assignment posted on Blackboard as well. Homework and project due dates are listed in the schedule at the end of this document.

- Class participation: **10%** (includes participation in specific in-class activities [see blank grade sheet for specifics] and overall presence and participation in class)
- Non-LTP writing assignments: **10%** (includes out-of-class activities not related to long-term projects or PowerPoint presentations plus in-class exercises directly related to LTP sections: specifically your "You as Writer" essay and your popular piece)
- Writing exercises: **35%** (includes first and second drafts of all LTP sections and the reviews you do on your peers' work)
- Final writing project: **30%** (includes final content and style and also how improved the final piece is)
- PowerPoint presentation: **15%** (includes scientific content, slide appearance, and delivery)

Homework and writing exercises that are turned in late will be marked down by **5% each day** they are late unless a they are late for a legitimate reason (eg, conference, interview, athletic competition), and they must be turned in before those that were turned in on time are returned.

Final writing projects (due **Thursday, April 28, 2015**) that are turned in late will be marked down **10% per day** and must be turned in by **Monday, May 4, 2015** at the very latest. Please note that your final paper and portfolio are due on the first day of exams in order to give me enough time to grade them (which is why the due date is the first day of exams and not on our designated exam day). Given this, if you will not be on campus on that day, you will be able to turn in your paper electronically any time on that day and arrangements can be made for when you are able to drop off your portfolio.

Final letter grades will be determined as follows:

| Letter grade | Overall % | Letter grade (cont) | Overall % (cont) |
|---------------------|------------------|----------------------------|-------------------------|
| A | 93.0 – 100.0 | C | 73.0 – 76.9 |
| A– | 90.0 – 92.9 | C– | 70.0 – 72.9 |
| B+ | 87.0 – 89.9 | D+ | 67.0 – 69.9 |
| B | 83.0 – 86.9 | D | 63.0 – 66.9 |
| B– | 80.0 – 82.9 | D– | 60.0 – 62.9 |
| C+ | 77.0 – 79.9 | F | 0 – 59.9 |

A blank grade sheet will be provided to you so that you will be better able to keep track of your performance in this course. Please note that the different sections (color coded on the sheet) are scaled to the percentages above. Please also note the assignments and in-class activities that have points associated with them. Hopefully, it will be fairly easy to track your progress in this course, but if you have any questions about your performance in the class, you are always welcome to meet with me at any time (or multiple times) throughout the semester.

Revisions

Although you will be required to write at least 2 drafts of each section of your long-term project before turning in the final paper, you are welcome to revise more often (up to 3 times). Because it can be helpful to get both written comments and to have a verbal discussion about your drafts, the structure of these revision sessions will be face-to-face meetings during which we will discuss your revised section, which you can e-mail to me beforehand.

In order to give you a structure for these revisions (so that you do not find yourself trying to revise everything at the very end of the semester), **I have scheduled 3 optional revision dates** (see schedule at the end of this document) for you. These dates will represent weeks that you can meet with me to discuss **1** revised section with me. During these sessions we will discuss the particular section (eg, methods, discussion) that you have revised based on the written comments you received from me on draft 2 of that section. Therefore, it is imperative that **you give me the section at least 24 hours ahead of time** so that I have time to read it before we meet.

Each of these review sessions will focus on 1 section, and so you are welcome to revise 1 section 3 times, 3 sections once, 2 sections once, and so on. You are also welcome to choose not to revise additional times as well. These sessions are specifically for you to get feedback from me on a revised draft that you have written; you are obviously always welcome to come during office hours or to schedule an appointment with me to talk about specific questions/concerns/issues/comments about any section at any time. Because I am trying to accommodate all students looking to meet to discuss a revised section, **I am limiting each of you to 1 revised section per revision week.**

Attendance

Lecture attendance and punctuality, while strongly encouraged, are not required. Please keep in mind, however, that **10%** of your grade is class participation, which includes not only points for attendance, but also points for in-class activities (many of which you cannot do outside of class). Therefore, if you miss class, you risk losing points on multiple fronts. As a general rule of thumb, you should try not to miss more than 3 classes if you want to do well in this class. Being late will also have a negative impact on your grade. If you need to miss a few classes for a specific reason, please let me know so we can discuss what to do.

Honesty and Civility

You must abide by Temple's Code of Conduct (http://policies.temple.edu/getdoc.asp?policy_no=03.70.12), which prohibits:

1. Academic dishonesty and impropriety, including plagiarism and academic cheating.
2. Interfering or attempting to interfere with or disrupting the conduct of classes or any other normal or regular activities of the University.

Plagiarism and other forms of cheating are taken very seriously. If you have any questions as to whether something is plagiarism, please ask me, or, if that's not possible, assume that it is and don't do it! We will be talking a lot about plagiarism in this course given the nature of the material covered, so I really, really want you all to embrace these lessons and turn in work that does not even have a whiff of plagiarism about it.

Disabilities

Any student who needs accommodation because of a disability should contact me privately to discuss the specific situation as soon as possible. The Office of Disability Resources and Services (215-204-1280) in Ritter Annex 100 can coordinate reasonable accommodations for students with documented disabilities.

Academic Rights and Responsibilities

Freedom to teach and freedom to learn are inseparable facets of academic freedom. The University has adopted a policy on Student and Faculty Academic Rights and Responsibilities (Policy # 03.70.02) which can be accessed through the following link: http://policies.temple.edu/getdoc.asp?policy_no=03.70.02.

Final Note

Writing is often seen as scary, tedious, and nit picky, but I still hope that you enjoy the class (at least some of it, some of the time!) and learn something from it. You might be surprised how useful some of this information may be for other aspects of your life—writing is likely to play an important role in your life regardless of your career choice!

Topics and Readings—Tentative Schedule

Please note that this is a tentative schedule and may be modified depending on how the course is progressing. If possible, changes will be announced in advance, and students will be well aware of them.

| Week | Date | Topics | Assignments Due |
|------|--------------|--|---|
| 1 | Week of 1/11 | <ul style="list-style-type: none"> • Introduction to the course: general principles and importance of (scientific) writing with a focus on storytelling • The importance of storytelling: coordinating audiences and purposes | |
| 2 | Week of 1/18 | <ul style="list-style-type: none"> • The research paper as a whole: what does it look like and how does that compare with other types of writing • The writing process: why pre-writing is so important (eg, finding and evaluating sources and avoiding plagiarism) | <ul style="list-style-type: none"> • 3 examples of scientific writing (1/19) • You as writers essay; pick LTP article (1/21) |
| 3 | Week of 1/25 | <ul style="list-style-type: none"> • A how-to for writing a methods section • Understanding the results: not as obvious as one might think | <ul style="list-style-type: none"> • 3-sentence summary (1/28) |
| 4 | Week of 2/1 | <ul style="list-style-type: none"> • References: how-to (part 1) • References: how, why, when... (part 2) [note: class in Writing Center] | <ul style="list-style-type: none"> • Methods—draft 1 (2/2) • Methods—comments (2/4) |
| 5 | Week of 2/8 | <ul style="list-style-type: none"> • References: how-to (part 3) [note: class in Writing Center] • An introduction to the introduction | <ul style="list-style-type: none"> • Results—draft 1 (2/9) • Results—comments; read Watson and Crick (2/11) |
| 6 | Week of 2/15 | <ul style="list-style-type: none"> • Introduction to figures: content and creation • Tables and figures: hands on [note: class in Writing Center] | <ul style="list-style-type: none"> • Methods—draft 2 (2/18) |
| 7 | Week of 2/22 | <ul style="list-style-type: none"> • A discussion of a discussion • Discussion circle | <ul style="list-style-type: none"> • Introductions—draft 1 (2/23) • Introductions—comments; results—draft 2; references (2/25) |
| 8 | Week of 2/29 | <ul style="list-style-type: none"> • SPRING BREAK | |
| 9 | Week of 3/7 | <ul style="list-style-type: none"> • The art of summarizing: importance of abstracts and titles • Introduction to presentations: review importance of purpose and audience in relation to content | <ul style="list-style-type: none"> • Discussions—draft 1 (3/8) • Introductions—draft 2; discussion—comments (3/10) |
| 10 | Week of 3/14 | <ul style="list-style-type: none"> • Presentation overall: content. What should go into a presentation? • Presentation overview 2: how to use PowerPoint; tips for good presentation techniques [note: class in Writing Center] | <ul style="list-style-type: none"> • Abstracts/titles—draft 1; figures/tables—draft 1 (3/15) • Discussions—draft 2; Abstracts/titles—comments; figures/tables—comments (3/17) |
| 11 | Week of 3/21 | <ul style="list-style-type: none"> • Writing simply: word choice and grammar review • Different genres of science writing revisited: purpose | <ul style="list-style-type: none"> • Abstracts/titles—draft 2; figures/tables—draft 2 (3/24) |
| 12 | Week of 3/28 | <ul style="list-style-type: none"> • Student presentations: day 1 • Student presentations: day 2 | <ul style="list-style-type: none"> • Optional revision 1 (3/28–3/31) |
| 13 | Week of 4/4 | <ul style="list-style-type: none"> • Student presentations: day 3 • Student presentations: day 4 | <ul style="list-style-type: none"> • Optional revision 2 (4/4–4/7) |

| Week | Date | Topics | Assignments Due |
|------|--------------------------|--|--|
| 14 | Week of 4/11 | <ul style="list-style-type: none"> • Student presentations: day 5 • Student presentations: day 6 (if needed) | <ul style="list-style-type: none"> • Optional revision 3 (4/11–14) |
| 15 | Week of 4/18 | <ul style="list-style-type: none"> • Importance of writing in other areas: focus on cover letters and resumes • Importance of writing in other areas: focus on personal statements | <ul style="list-style-type: none"> • Popular pieces (4/21) |
| 16 | Thursday, April 28, 2016 | | <ul style="list-style-type: none"> • Final LTPs with entire portfolios (4/28) |