BIOL 4010—Research and Technical Writing in Biology—Fall 2018

Times/Room: Wednesday 6:00-7:45 p.m. (lecture) N201 (or N206)
Friday 1:00-3:50 p.m. (lab.) N201
Instructor: Dr. Patrick Kelly, Professor of Zoology and ESRP Coordinator
Office Hrs: N277—Tuesdays 9-11 and Fridays 9-10, or by appointment.
Phone: 209-667-3446
Email: pkelly@csustan.edu
Email is the best way to reach me. I usually respond quickly to simple requests and questions, but please write Biol 4010 in the subject line, and include your full name.
Communication: Please check your email and Blackboard every day. You can set up your Stan State email to forward emails to an address you check more frequently
Initial Class Meeting: Wednesday, August 22nd, 2018 at 6:00 p.m.
Lab Teaching Assistant: Amanda Woodhouse, awoodhouse@csustan.edu

Course Description—This course provides an introduction to bibliographic research, design/interpretation of experiments, statistical testing of results, and preparation of technical communications in biology. It is designed to enhance the skills of biology majors by focusing on those elements of research, interpretation, and written presentation that typically require considerable practice. It satisfies the upper-division writing proficiency (WP) requirement.

Prerequisites—Completion of the Writing Proficiency Screening Test (WPST) with a passing score, BIOL 3310 and BIOL 3350 (with grades of C- or higher), ENGL 1001, ENGL 1002, or ENGL 1005, and junior standing or consent of instructor, or already have taken and passed with a C or better a writing proficiency course or be classified as a graduate student. It also helps to have taken UD biology classes that deal with primary literature, writing, and statistics, and to know how to use MS Office applications.

Course Questions & Learning Objectives:

a. What makes scientific information reliable?
b. How do you find scientific information?
c. How are scientific ideas conveyed to fellow scientists and to the public?
d. How do you effectively and efficiently read scientific publications?
e. What aspects of style and composition are unique to science writing?
f. How can we write in a way that convinces readers of the validity of our ideas?
g. What forms of criticism are most helpful for improving writing?
h. How can we effectively be our own best editor?

After completing this course, you should be able to:

1. Critically analyze and understand written scientific communications.
2. Identify aspects of writing style, composition, and data presentations that effectively communicate scientific ideas and information.
3. Use bibliographic databases to find published scientific information.
4. Synthesize scientific information from multiple sources and develop novel research questions.
5. Distill a scientific paper into an abstract that meets professional standards.
6. Write a short scientific review paper that also meets professional standards.
7. Work effectively with other students (small team) to develop a grant proposal.
8. Formally present the proposal to the class (usually with PowerPoint).
9. Prepare an application for a job or graduate/professional school.

Assignments & Grades

Various assignments total 400 points:

1. Using bibliographic tools in the library (10 pts);
2. Participation (10 pts);
3. Paraphrasing and abstracting (40 pts);
4. Midterm exams on fundamentals of scientific writing (40 pts);
5. Data and visuals—statistically summarize and test data; display summaries in tables and figures (50 pts);
6. Write an original review paper (100 pts);
7. Student teams will write and present a research proposal (100 pts);
8. Final exam (50 pts)

The original review paper will be in the form of a journal review article on a specific topic in the general areas of ecology (plant or animal), behavioral ecology, animal behavior, or conservation biology. Topics have to be approved in advance and no more than one student can write about any particular topic. The review paper must be completely original. It cannot be submitted to any other class, and no paper from any other class can be used for Biol 4010. Emphasis is on writing quality rather than quantity, so the minimum page length is relatively low (8 pages; double-spaced). The paper should have at least 20 citations from the primary literature, references to peer-reviewed, research publications. More information on this assignment will be provided in Week 2.

Instructions on the research proposal will be provided in the coming weeks. Writing teams will be randomly selected. Each team will submit a short list of topics for approval. On the last day of class (Wed., Dec 6), each team will formally present its proposal before the class in a symposium format. The presentations will be judged by other students in the class, as well as by the instructor and teaching assistant.

There will be two midterm exams on the fundamentals of scientific writing, a more comprehensive final exam, and some other assignments will be completed in lab. Neatness, grammar, spelling, clarity, organization, conciseness of writing, and how well results are tested, interpreted, presented, and discussed all count in grading. Attendance will be taken and unexcused absences during lab assignments/exams will receive zero points. Points have also been set aside for overall participation, and office hour visits are strongly encouraged.

Grading Scale (%)	
90-100	A
80 - 89	B
70 - 79	C
60 - 69	D
0 - 59	F

Final grades will be based on overall performance in all assignments and overall class participation. Note that a grade of C or better is required to pass a WP class.

Except for designated collaborative activities, all writing and other work you present for credit must be entirely your own.

Expectations

1. You are expected to treat everyone in class with respect and kindness. In order to create a thriving learning community, it is important that we encourage one another to do our best and to not put anyone down.
2. To avoid distracting yourself and others, please do not phone, text, email, social network, surf the web, or do work for other classes when we are working on in-class activities. All electronic devices (phones, tablets, music players, etc.) must be turned off and kept in your bag during class. Class time is not to be used for social networking (Facebook, etc.) or listening to personal audio (ear buds). If you must respond to a voice mail or text (e.g., re. a family matter), please step out of the room, preferably after I am done presenting new material so that you do not distract others.
3. You will be required to use the computers in N201 for many lab activities, but in certain instances personal laptops may be used for some activities.
4. I do not allow the use of laptops for note-taking during lectures and presentations. This is because there is now more than ample evidence that students who take notes by hand *remember* conceptual *information better than those who take notes on a computer*[1]. So, buy a spiral notepad/similar. It is very important to take good notes on the materials I will be covering. There is no substitute for good notes.
5. Come to class properly prepared by doing any assigned readings prior to class. Engage the material deeply and critically. Treat your education as if it is helping to prepare you to change the world (which hopefully it is).
6. Attend every class session, be on time, and participate fully. Absences will be noted.
7. You are required to work independently during in-class assignments and on take-home assignments, unless instructed otherwise. Turn in assignments on time.
8. Maintain the highest standards of academic integrity. All work that you submit must be your own. Plagiarism—taking direct quotes or ideas from other sources without attribution—is cheating, and will not be tolerated. Reports and other assignments with plagiarized material will receive a zero. A second incident of plagiarism by a student will result in an F for the course grade. I am very good at detecting plagiarism and you should note that *Turnitin* is used for major assignments in this class. Do not take the risk. If you have questions about what is acceptable, please ask me.
9. Take the initiative to use course and campus resources (my office hours, web sites, readings, the Writing Center, Library) to get the most out of the course.
10. Lecture time slots will be used also for labs, especially during the 2nd half of the semester. For the last few weeks of the semester, some lab time may be done on your own or in small groups (e.g., grant-writing teams) in the library or elsewhere (for library research and writing).
11. Please be neat and clean up after yourself.

[1] Holstead, C.E. 2015. The benefits of no-tech note taking. Chronicle of Higher Ed. (March 4, 2015)

Your instructor will do the following: do his best to provide you with a stimulating, useful, and fun course; treat you with respect; assign grades impartially; be available to help during office hours and via email; do his best to return assignments and post grades in a timely manner.

Assignments are due on the day stated

Points will be deducted for assigned materials that are turned in late (10% per day).

Format and length of writing assignments

Written assignments are evaluated as objectively as possible. The following components and their maximum points (%) make up the evaluation:

Length	15
Spelling & Grammar	10
Style & Format (adherence to instructions)	10
Organization	10
Clarity of Expression	25
Completeness of Topic Coverage (not length)	10
Originality	20

Length of all papers is based on the following format:

1. 1-inch top and bottom margins (headers and footers, if any at 0.5 inches)
2. 1.25-inch left and 1-inch right margins
3. Use 12-point Arial for body text (some headings can be 14- or 16-pt).
4. Double spacing (except for your name and date, top left corner of the front page)

Points will be deducted for papers that do not meet the minimum specified length, and the greater the deficit, the greater the deduction. It is prudent therefore to aim for a draft that is 25% longer than the required minimum; e.g., shoot for a 10-page draft. This will allow you to refine your writing, and in so doing, shorten the paper.

Written materials and electronic submission

Always keep copies of assignments before turning them in. Damage, failure, or theft of your computer files or equipment is not an acceptable excuse. Hard copies (single-sided) and electronic copies (usually submitted via Blackboard) must be turned in on the due date. Students are required to follow very specific file-naming instructions.

In emails to me, please use your official Stan. State email address and identify yourself clearly in the body of the email and provide identifying keywords or the required file name in the subject line. Again, so that your communication gets the timely attention it deserves, it is important to start all email subject lines with "Biol 4010 -." Remember, careful and courteous email correspondence is increasingly important in today's job market and workplace. I may keep originals of some submitted hard copy materials. If so, you will have an opportunity to examine and copy such material, and feedback will be provided.

Reference materials and sources

The assigned text for the course is Angelika H. Hofmann's *Writing in the Biological Sciences: A Comprehensive Resource for Scientific Communication* (3rd edition, 2019, Oxford University Press, New York). Other useful texts are Jan Pechenik's *A Short Guide to Writing About Biology* (9th edition, 2016, Pearson), Victoria McMillan's *Writing Papers in the Biological Sciences* (6th edition, 2016; Bedford/St. Martin's Press), Karin Knisely's *A Student Handbook for Writing in Biology* (5th edition, 2017, W.H. Freeman), *Chicago Manual of Style* (16th Edition), and an old favorite, Strunk & White's *The Elements of Style*. The authoritative reference for scientific writing however is *Scientific Style and Format* (CSE Manual for Authors, Editors, and Publishers, 8th Edition; $75).
http://press.uchicago.edu/ucp/books/book/chicago/S/bo13231737.html

Ordinarily, handouts will be provided in electronic form only (PDFs for download from Blackboard). Please bring them to class—hard copy or on your laptops.

On Friday, August 24th (at 1:00 p.m.), we will meet at the Library (L240), where you will get an overview of the latest bibliographic and electronic search tools from Mr. Tim Held, Reference and Instruction Librarian.

In Conclusion

Writing is one of the most essential tools that you will develop in college and use throughout your life. It is the most important and trusted way that scientific information is shared. Without effective writing, even the best scientific research serves no purpose. Additionally, the quality of your writing is often the most important factor that is used by others, including employers, to judge the quality of your work, as well as your potential as a scientist and professional. With effective writing, your ideas and arguments gain meaning and can be critically examined.

Accordingly, you should fully engage with the in-class activities during the course. Many of your activities, especially peer-review and group projects, can only succeed if each and every student contributes fully. It is important that you are fully committed to the class and to staying on-task for in-class assignments, especially for group or collaborative assignments, and there will be a number of those in lab. Showing up late, leaving early, not contributing, or distracting others will be noted.

You are ultimately responsible for all aspects of your reports and articles. It is important to note that I do not mark (or notice) all errors and style faults in your draft papers, especially if they are full of problems. The same errors, repeated throughout a paper are typically marked only once or a few times, then ignored, but you are expected to correct all occurrences. Some errors, faults, or alternate wording to increase clarity or reduce verbiage may be marked in a final draft, but not the review draft. This occurs unintentionally because I may have been distracted by other problems in the same passage. This is neither my fault nor that of someone who reviewed your paper. It is very important to have others evaluate you work prior to submission. You must learn to be your own best critic.

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Wk	D	Date	Time	Schedule, Topics, and Assignments
1	W	22 Aug	6:00-7:45	Course introduction; scientific method; documenting a paper. (Ch. 1, 7)
	F	24 Aug	1:00-3:50	Finding research literature (Ch.1, 4); library tour. **Ex. 1** (Biblio. Tools)
2	W	29 Aug	6:00-7:45	Rev. Article (**RA**; Ch. 11); Ethics (Ch. 4); Sci. Writing Principles (Ch. 2)
	F	31 Aug	1:00-3:50	Style (cont.); reading & note-taking (Ch. 12); word proc. **Topic short list due**
3	W	5 Sept	6:00-7:45	Sci. Writing Principles (Ch. 3); paraphrasing & abstracts. (Ch. 10) **Ex. 2**
	F	7 Sept	1:00-3:50	Review Articles; writing lab (paraphrasing & abstracts) **3 refs due**
4	W	12 Sept	6:00-7:45	Sci. Writing Principles—**Exam 1**
	F	14 Sept	1:00-3:50	Return to Library to work on bibliographic research (this time for RA)
5	W	19 Sept	6:00-7:45	Data, Figures, Tables, & Statistics (Ch. 5, 6)
	F	21 Sept	1:00-3:50	Figures, Tables, & Statistics Lab **Ex. 2 due**
6	W	26 Sept	6:00-7:45	Research Proposals (**RP**; Ch. 15) **RA rough draft due**
	F	28 Sept	1:00-3:50	Drafting a research/grant proposal; Sci. Writing Principles—**Exam 2**
7	W	3 Oct	6:00-7:45	Individual appointments (review RA rough drafts); students work in lab.
	F	5 Oct	1:00-3:50	Individual appointments (cont.) and students work on assignments in lab **Ex. 3** (Figures, Tables, Statistics)
8	W	10 Oct		**NO CLASS—Non-instructional day**
	F	12 Oct	1:00-3:50	Open Lab: students work on review articles, Ex. 3, or grant proposals.
9	W	17 Oct	6:00-7:45	Punctuation; revising and editing (Ch. 8, 9)
	F	19 Oct	1:00-3:50	Open Lab: students work on review articles, Ex. 3, or grant proposals
10	W	24 Oct	6:00-7:45	Document formatting; students work in lab on final drafts
	F	26 Oct	1:00-3:50	Students work in lab on final editing & formatting of review articles
11	W	31 Oct	6:00-7:45	Grant teams work together **Ex. 3 Due**
	F	2 Nov	1:00-3:50	Extreme Abstracting (lab assignment). **RA final draft due**
12	W	7 Nov	6:00-7:45	Presentations (Ch. 13, 14)
	F	9 Nov	1:00-3:50	Poster assembly exercise using PowerPoint
13	W	14 Nov	6:00-7:45	Job applications and interviews (Ch. 16)
	F	16 Nov	1:00-3:50	**Research Proposal (RP) rough drafts due and reviewed in lab.**
14	W	21 Nov	6:00-7:45	No Class (make up time in Wk. 15)
	F	24 Nov	1:00-3:50	**NO CLASS—Thanksgiving**
15	W	28 Nov	5:00-7:45	In-class writing review & assistance; work on proposals/presentations
	F	30 Nov	1:00-4:50	In-class writing review & assistance; work on proposals/presentations
16	W	5 Dec	6:00-7:45	**RP—team presentations and turn in proposals; Pizza Time!**
FW	W	12 Dec	6:00-7:45	**Final Exam**