**BIOLOGY 392: INTRODUCTION TO BIOLOGICAL RESEARCH**

**Syllabus, Spring 2019**

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Office hours: TBD and by appointment. We encourage you to make appointments directly with us or through messages delivered by e-mail, voice mail, or Laura Strong the department administrative assistant (879-2855).

Tuesday 5:00 -7:50 p.m., Th-374

**Learning Outcomes**

- Learn about the process of conducting scientific research (e.g., responsible conduct, ethics, plagiarism, authorship, data management, collaborative research)
- Directly experience the process of conducting scientific research in a mentor’s laboratory and develop your own research project
- Use library databases to find relevant background literature sources and utilize them effectively in choosing a research question and developing hypotheses
- Learn how to write an effective research proposal for the Summer Research Program in the Sciences and Mathematics
- Construct a research budget and apply for a grant from the University Enrichment Committee
- Review seminars of visiting scientists and your peers to recognize effective styles of presenting scientific research
- Learn how to design a successful poster for a scientific meeting

We will accomplish these goals through both in-class and out-of-class assignments and activities. In consultation with your research advisor, you will identify a research question and then delve into the scientific literature to learn as much as you can about the historical background of your area of study, about similar work being done by other scientists, and about the techniques that must be used in your area of work. During this time you will refine your project to ensure that it is feasible and that the necessary supplies and equipment are available. Simultaneously, we will focus class time on techniques of effective writing. You will write and revise a research proposal for a general audience and assist others by acting as a critical peer reviewer for their proposals.

Since this class is a 0.5 unit class, and the focus of the class is to submit a proposal before spring break, this class is heavily front-loaded in its time commitment. Thus, the second half of the course will only focus on (1) constructing a budget for a grant proposal to the University Enrichment Committee, and (2) designing a poster outlining your research project with potential results and interpretations that relate to your hypotheses, and (3) learn about the nature of undergraduate research by attending research presentations from students who have performed undergraduate research last year. See schedule for class meeting times. Specifically, note that...
there is an attendance requirement for the Phi Sigma research symposium on a weekend usually early in April.

**Other Required Course Activities**

You are required to attend and critique five (5) seminars or major presentations during the semester. These critiques are very important for the course because they will form the basis for discussions about what constitutes an effective oral presentation. See document on reviewing seminars. I recommend the Thompson Hall Science & Mathematics Seminars on Thursdays at 4 pm (https://www.pugetsound.edu/news-and-events/arts-at-puget-sound/thsms/). There are many other possibilities available on and off campus as well.

You will also be required to attend a substantial portion of the Undergraduate Science Symposium held toward the end of the spring semester. Your observations at this event will form the basis for your own future presentations about your own research.

**Course Mechanics**

Class meetings will vary in format and include lectures, group discussions, group work, individual meetings, and library work. Participation by everyone is essential and is an important part of your grade. Most materials for this course will be posted on Canvas. You will also submit most of the assignments through the course Canvas site.

There is not a specific textbook for this course. We will post most readings on Canvas. You should already have one of these sources from previous courses:

- A Short Guide to Writing About Biology, by Jan Pechenik
- A Student Handbook for Writing in Biology, by Karin Knisely.

Also, remember that the Center for Writing, Learning, and Teaching (Howarth 105) provides excellent assistance and resources for writing. In addition, the science liaison librarian, Eli Gandour-Rood has put together a website for the course at: http://research.pugetsound.edu/biol392. We will visit the library during the course to discuss literature searches and organizing references for your research project.

**Course Grade**

Final class grades will be earned based on the quality of your assignments and your classroom participation. Approximately equal weight will be given to each of the following components:

- Research Proposal: http://www.pugetsound.edu/academics/academic-resources/student-research-travel-award/summer-research-grants-in-scie/
- UEC grant application: http://www.pugetsound.edu/academics/academic-resources/student-research-travel-award/student-research-awards/
- Proposal editing and quality of peer-review
- Annotated references
• Seminar critiques (5) and attendance at the Phi Sigma Undergraduate Research Symposium
• Poster construction of proposed research
• Class attendance and participation

Turning in Assignments

Assignments are due at the start of lecture or as indicated on the individual assignments and course schedule. Most assignments will be due in digital format and submitted via Canvas. Please don’t e-mail us your completed assignments unless we have made prior arrangements for you to do so.

Late Policy

Turning in an assignment late will reduce the maximum credit available by 5% per day (including weekends; see info about e-mailing me late assignments), down to 0%, after which time your assignment is no longer accepted for grading. Additionally, we cannot accept written assignments after the last day of classes. Also, since this course focuses on producing a grant proposal with a deadline, grant proposals cannot be submitted past the deadline for credit. If you miss the proposal deadline you are missing the main point of this class, and we will work with you to withdraw from the class.

Work turned in late on the same day that it is due will be considered 1 day late and 5% of the points possible will be deducted from your earned grade. We will waive this penalty only if there is a medical or family related emergency. Written documentation of the nature of the emergency may be required.

Extra-curricular activities, travel, or work in other courses are not valid excuses for late work. If you are going to have to miss class for one of these reasons, it is your responsibility to check the lecture schedule and assignment guidelines to determine if anything is due in your absence. Please check with us if you are unsure. Absences for a bona fide medical reason will require written evidence.

Academic Honesty, Plagiarism, and Scientific Integrity

Academic honesty, which includes the topics of plagiarism and scientific integrity, is a fundamental principle of higher education and its institutions. Policies on academic honesty, established to protect honest students and researchers, should guide all your actions in all courses you take at Puget Sound. As you learned when you started at Puget Sound, academic dishonesty is not tolerated at this university. You also learned that it is your responsibility to read and understand the University of Puget Sound policies on Academic Dishonesty and Plagiarism.

Classroom Emergency Response Guidance

Please review university emergency preparedness, response procedures and a training video posted at www.pugetsound.edu/emergency/. There is a link on the university home page.
Familiarize yourself with hall exit doors and the designated gathering area for your class and laboratory buildings.

If building evacuation becomes necessary (e.g. earthquake), meet your instructor at the designated gathering area so she/he can account for your presence. Then wait for further instructions. Do not return to the building or classroom until advised by a university emergency response representative.

If confronted by an act of violence, be prepared to make quick decisions to protect your safety. Flee the area by running away from the source of danger if you can safely do so. If this is not possible, shelter in place by securing classroom or lab doors and windows, closing blinds, and turning off room lights. Lie on the floor out of sight and away from windows and doors. Place cell phones or pagers on vibrate so that you can receive messages quietly. Wait for further instructions.

Office of Accessibility and Accommodations

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Peggy Perno, Director of the Office of Accessibility and Accommodations, 105 Howarth, (253) 879-3395. She will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

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