PURDUE UNIVERSITY

DEPARTMENT OF BIOCHEMISTRY

BCHM 69900 Syllabus
Fall/Spring/Summer

Research Ph.D. Thesis

INSTRUCTOR

Faculty members of the Department of Biochemistry, who can serve as Ph.D. thesis advisors may assume responsibility for guiding a BCHM 69900 research project.

INSTRUCTIONAL MODALITY

The course is set up as an individual study course.

PREREQUISITES

Permission from Instructor

COURSE OBJECTIVES

BCHM 69900 is a research course with expectations of reasonable progress in scholarly research. These expectations include:
1. conducting independent learning on the background, motivation, and prior work related to the subject of the research project,
2. actively conducting research and at a level consistent with a professional research position,
3. contributing to the overall operations of the laboratory,
4. following all safety guidelines and expectations associated with the research environment,
5. following ethical guidelines for scientific research,
6. contributing to the written and oral dissemination of research findings,
7. contributing to the laboratory research funding through research and/or writing, and
8. meeting the documented expectations of the research advisor.

DEPARTMENTAL LEARNING OUTCOMES ADDRESSED BY THIS COURSE

BCHM 69900 students will understand the scientific method. They will be able to develop hypotheses, design experiments, and critically analyze results to create new knowledge.

BCHM 69900 students will communicate scientific knowledge, experiments and conclusions effectively as speakers and writers.

BCHM 69900 students will use scientific instrumentation to evaluate the activity or function of biological macromolecules.

BCHM 69900 students will demonstrate knowledge of analytical and preparative methods that can be applied to biochemistry, molecular biology and/or related disciplines.

BCHM 69900 students will demonstrate knowledge of accepted safe laboratory practices.

BCHM 69900 students will demonstrate laboratory experience working with a diverse group of individuals as part of a research team.

BCHM 69900 students will demonstrate the ability to organize and document laboratory procedures and results.

BCHM 69900 students will describe research projects in written documents and oral presentations that can be readily understood by a general scientific audience.

BCHM 69900 students will appreciate the ethical issues facing professionals in the life sciences.

TEXTBOOK

There is no assigned textbook for this course. Background information will be largely derived from reviews and the primary scientific literature.

LABORATORY TIME AND PLACE

To be arranged with the course instructor.

CREDIT HOURS AND ATTENDANCE

BCHM69800 is a variable credit course. Credits may vary (1-8 credit hours for Fall or Spring semesters, 1-6 credit hours for Summer), depending on coursework credits also taken during the same semester.

By signing up for research credits, the student acknowledges agreement with the expectations set forth by the research advisor. The faculty member advising the student acknowledges that if the student's progress is acceptable with regard to expectations for the semester, the student will receive a satisfactory (S) grade for the term. The student and advisor also acknowledge that failure to meet these expectations may result in an unsatisfactory (U) grade.

Specific hours in the lab should be worked out between the research advisor and the student. In general, students should commit to large blocks of time in the lab to ensure productivity. It is understood that students may sometimes need to adjust their schedule based on the time required to complete experiments.

GRADING

The assigned grade for BCHM 69900 will necessarily reflect the priorities and expectations of the research advisor. Some suggested guidelines for assigning grades are provided below. For further guidance commensurate with student's current research as outlined in Appendix 1: Expectations for Progress in the Program in the Biochemistry and Molecular Biology Graduate Program Handbook.

S: Student assumes responsibility for directing project. Demonstrates clear understanding of hypothesis tested and of experimental approaches used to test hypothesis. Student keeps an accurate record of experiments neatly written in a laboratory notebook, and demonstrates strong time-management skills and progression on research project. Student has no issues with attendance, or research productivity. Student follows appropriate safety procedures, demonstrates appropriate use and maintenance of laboratory equipment and facilities and research resources. Student disseminates research discoveries through writing, scientific posters and/or oral presentations.

U: Student has poor understanding of research project or fails to grasp basic concepts driving research project. Student is not reliable regarding hours in lab or is not reliable in maintaining an accurate lab notebook or has failed to perform acceptably. Student does not follow safety procedures and repeatedly inappropriately uses or maintains laboratory equipment, facilities and research resources. Student fails to disseminate research discoveries through writing, scientific posters or oral presentations.

Please keep in mind that expectations increase during development of expertise and are likely to reflect curricular and lab experience of the student.

The final date to withdraw from the course with a W for Fall 2025 is Tuesday, November 25. Each student will have up-to-date graded feedback before Mon., Nov. 24 and again before Mon., Dec. 8.

COURSE REQUIREMENTS

A Research Agreement Form must be completed with the signatures of both the Major Professor and the student and be submitted to the Graduate Program Coordinator each semester. Student is expected to meet or exceed expectations outlined in this document.

PROTECT PURDUE PLAN

Any student who has substantial reason to believe that another person is threatening the safety of others by not complying with Protect Purdue protocols is encouraged to report the behavior to and discuss the next steps with their instructor. Students also have the option of reporting the behavior to the Office of the Student Rights and Responsibilities. See also Purdue University Bill of Student Rights and the Violent Behavior Policy under University Resources in Brightspace.

MENTAL HEALTH

If you find yourself beginning to feel some stress, anxiety and/or feeling slightly overwhelmed, try WellTrack**.** Sign in and find information and tools at your fingertips, available to you at any time.

If you need support and information about options and resources, please contact or see the Office of the Dean of Students. Call 765-494-1747. Hours of operation are M-F, 8 a.m.- 5 p.m.

If you find yourself struggling to find a healthy balance between academics, social life, stress, etc., sign up for free one-on-one virtual or in-person sessions with a Purdue Wellness Coach at RecWell. Sign up is free and can be done on BoilerConnect. Students in Indianapolis will find support services curated on the Vice Provost for Student Life website.

If you're struggling and need mental health services: Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at 765-494-6995 during and after hours, on weekends and holidays, or by going to the CAPS offices in West Lafayette or Indianapolis.

ACCESSIBILITY AND ACCOMODATIONS

Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.

ACADEMIC MISCONDUCT

Academic misconduct of any kind will not be tolerated in BCHM 69900. Information on Purdue's policies can be found at http://www.purdue.edu/ODOS/osrr/integrity.htm.

To provide you with an unambiguous definition of academic misconduct, the following text has been excerpted from "Academic Integrity: A Guide for Students", written by Stephen Akers, Ph.D., Executive Associate Dean of Students (1995, Revised 1999, 2003), and published by the Office of the Dean of Students in cooperation with Purdue Student Government, Schleman Hall of Student Services, Room 207, 475 Stadium Mall Drive West Lafayette, IN 47907-2050.

"Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, *University Regulations*] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972]

More specifically, the following are a few examples of academic dishonesty which have been discovered at Purdue University.

- substituting on an exam for another student
- substituting in a course for another student
- paying someone else to write a paper and submitting it as one's own work
- giving or receiving answers by use of signals during an exam
- copying with or without the other person's knowledge during an exam
- doing class assignments for someone else
- plagiarizing published material, class assignments, or lab reports
- turning in a paper that has been purchased from a commercial research firm or obtained from the internet
- padding items of a bibliography
- obtaining an unauthorized copy of a test in advance of its scheduled administration
- using unauthorized notes during an exam
- collaborating with other students on assignments when it is not allowed
- obtaining a test from the exam site, completing and submitting it later
- altering answers on a scored test and submitting it for a regrade
- accessing and altering grade records
- stealing class assignments from other students and submitting them as one's own
- fabricating data
- destroying or stealing the work of other students

Plagiarism is a special kind of academic dishonesty in which one person steals another person's ideas or words and falsely presents them as the plagiarist's own product. This is most likely to occur in the following ways:

- using the exact language of someone else without the use of quotation marks and without giving proper credit to the author
- presenting the sequence of ideas or arranging the material of someone else even though such is expressed in one's own words, without giving appropriate acknowledgment
- submitting a document written by someone else but representing it as one's own"

USES OF AI IN THE COURSE

Unless otherwise directed, students are not permitted to use artificial intelligence (AI) language models, such as ChatGPT, to complete assignments. Students who use AI in any of their assignments in this course will be deemed to be in violation of the academic integrity expectations for this course. Violations can include a failing grade on the assignment in question or a failing grade for the course. All suspected incidents of academic dishonesty will also be referred to the Office of Student Rights and Responsibilities for further review of the student's status with the University as described below. **There will be times in the course where we will explore AI tools and how they can be used effectively and appropriately with scientific integrity.**

EMERGENCY PREPAREDNESS

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. To get information about changes in this course consult the class Blackboard site or e-mail or phone the instructor.

NON-DISCRIMINATION POLICY STATEMENT

Purdue University is committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. A hyperlink to Purdue's full Nondiscrimination Policy Statement is included in our course Brightspace under University Policies and Statements.

BASIC NEEDS SECURITY

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. There is no appointment needed and Student Support Services is available to serve students 8 a.m.-5 p.m. Monday through Friday.

SAFETY TRAINING

If students have not already done so, they must complete safety training before they can enroll in BCHM 69900. Review the University's Chemical Hygiene Plan manual and complete the Online Personal Protective Equipment Training:

1: Basic Lab Safety Fundamentals:

a. Go to https://otis.osmanager4.com/Purdue

b. Register to create a new account and login

c. Go to “view catalog” and complete the “Purdue – Lab Safety Fundamentals” module. It shows up on page 10.

d. Forward the certificate to hfornes@purdue.edu

2: Laboratory Specific Chemical Hygiene Plan:

a. Read the CHP manual: https://www.purdue.edu/ehps/rem/documents/programs/chp2014.pdf

b. Print out the form under Appendix A and take it to your research lab's principal investigator (PI) to discuss laboratory-specific safety. Sign the form, scan and email to hfornes@purdue.edu.

3. Personal Protective Equipment:

https://www.chem.purdue.edu/chemsafety/Training/PPETrain/PPEtrainCert.pdf
This training should be performed by your research lab's principal investigator (PI) or your immediate supervisor. Complete and sign the form. Your PI must also sign the form. Scan and email to hfornes@purdue.edu.