

# **BCHM 29800 Syllabus Fall/Spring/Summer 20XX**

## **Introduction to Biochemistry Research**

### **INSTRUCTOR**

Any faculty member in the Department of Biochemistry may assume responsibility for guiding a BCHM 29800 research project. In addition, Purdue faculty in science-related departments outside of the Department of Biochemistry may assume responsibility for supervising a BCHM 29800 project with the approval of the student's academic advisor

### **COURSE OBJECTIVES**

BCHM 29800 is intended to provide an introduction to independent undergraduate research. The primary goal of this experience is to learn the mechanics of laboratory science. Students will learn to work in a real laboratory situation where experiments are not preassembled for them. Students will record their data in laboratory notebooks, and gain experience in trouble-shooting and critically analyzing the results of their experiments.

BCHM 29800 students will learn:

- the vocabulary used in the day to day operations of a research laboratory
- the scientific background for their research project
- how to maintain a laboratory notebook
- how to perform basic biochemical techniques in a reproducible manner
- how to design an experimental control
- appropriate protocols for reporting accurate data

*BCHM 29800 provides an introductory research experience in an academic biochemistry laboratory that will prepare you for your independent research project in BCHM 49800.*

### **DEPARTMENTAL LEARNING OUTCOMES ADDRESSED BY THIS COURSE**

BCHM 29800 students will understand the scientific method. They will be able to develop hypotheses, design experiments, and critically analyze results to create new knowledge.

BCHM 29800 students will use scientific instrumentation to evaluate the activity or function of biological macromolecules.

BCHM 29800 students will demonstrate knowledge of analytical and preparative methods that can be applied to biochemistry.

BCHM 29800 students will demonstrate knowledge of accepted safe laboratory practices.

BCHM 29800 students will demonstrate laboratory experience working with a diverse group of individuals as part of a research team.

BCHM 29800 students will demonstrate the ability to organize and document laboratory procedures and results.

BCHM 29800 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**

Students may enroll for a maximum of 2 credits per semester. A minimum of 5 hours per week in the lab corresponds to 1 unit of credit during a regular 15-week semester. During the 8-week regular summer session, students will earn 1 credit for 10 hours of research per week. During the 4-week Maymester session, students will earn 1 credit for each 20 hours of research per week. In general, one credit requires approximately 75 hours of research. Any activity relevant to the student's research experience (e.g. attending lab meetings, reading necessary literature, etc.) will count toward the approximately 75 hours of work per credit.

Only 4 credit hours of BCHM 29800 or BCHM 29801 will count as science electives in a Biochemistry plan of study.

Only students with Freshman or Sophomore standing should enroll in BCHM 29800. Students with Freshman or Sophomore standing who have completed 4 credit hours of BCHM 29800 may enroll in BCHM 49800. Exceptions to these guidelines must be approved by the course instructor if s/he is a faculty member in the Department of Biochemistry, or by the student's academic advisor if the BCHM 298 mentor is from another department.

Specific hours in the lab should be worked out between the course instructor and the student. In general, students should strive to commit to large blocks of time in the lab (>3 hours) to increase productivity. It is understood that students may sometimes need to change their schedule and make up hours at another time. Advance notice of change of schedule should be given to the course instructor and where applicable, the graduate student, post-doctoral research associate, technician, or research associate who directly supervises the student as a matter of common courtesy. Failure to meet these attendance policies will affect the grade associated with BCHM 29800. BCHM 29800 may not be added after the first week of the semester except with explicit permission of the course instructor. Students who enter the laboratory after the first week are still expected to participate in ~ 75 hours of research per credit hour.

The course instructor will meet with BCHM 29800 students at least once per week to discuss research progress and provide guidance for the next week.

## **SPECIAL NEEDS**

If you will require special accommodations in BCHM 29800 because of diagnosed disabilities, you are expected to notify the course instructor prior to initiating project so that appropriate arrangements may be made.

## **GRADING**

BCHM 298 may be taken for a letter grade or for a pass/no-pass grade. If the course is to be taken as pass-no pass, the student must request this option at the time of registration

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and the instructor must sign off on it. Note: the equivalent of a "C" grade is required to earn a pass.

The assigned grade for BCHM 29800 will necessarily reflect the priorities and expectations of the supervising faculty member. Some suggested guidelines for assigning grades are provided below.

A: Student keeps an accurate record of experiments neatly written in a laboratory notebook. Student strives to understand the details of the experiment and the relevance of the experiment to the scientific project. Student has no attendance issues.

B: Student maintains a laboratory notebook, however there are deficiencies either in the accuracy of the notebook, or the student's understanding of the experimental process. Student has no attendance issues.

C: Student has modest understanding of experimental details and relevance of the experiment to the scientific project, but is not reliable regarding hours in lab or maintenance of laboratory notebook.

D: Student has poor understanding of experimental details and relevance of the experiment to the scientific project, and is unreliable regarding hours in lab or maintenance of laboratory notebook.

F: Student fails to grasp basic concepts, fails to maintain accurate records in a laboratory notebook and/or has substantial attendance issues

Students are strongly advised to ask the course instructor what their expectations are of a BCHM 29800 student. Please keep in mind that expectations are likely to reflect curricular and lab experience of the student.

### ACADEMIC MISCONDUCT

Academic misconduct of any kind will not be tolerated in BCHM 29800. 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.

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- 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"

### **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 e-mail or phone the instructor.

### **NON-DISCRIMINATION POLICY STATEMENT**

Purdue University's non-discrimination policy will be upheld in this course. Purdue University is committed to maintaining a community which 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 own 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.

Purdue University views, evaluates, and treats all persons in any University related activity or circumstance in which they may be involved, solely as individuals on the basis of their own personal abilities, qualifications, and other relevant characteristics.

For more information, see

[http://www.purdue.edu/policies/pages/human\\_resources/nondisc\\_pol.html](http://www.purdue.edu/policies/pages/human_resources/nondisc_pol.html)

#### **IDENTIFICATION OF SUPERVISING FACULTY MEMBERS**

Please see <http://www.ag.purdue.edu/biochem/undergrad/Pages/ResearchOps.aspx> for suggestions on how to identify a supervising faculty research mentor.

#### **SAFETY TRAINING**

If students have not already done so, they must complete safety training before they can enroll in BCHM 49800. Review the University's Chemical Hygiene Plan manual and complete the Online Personal Protective Equipment Training:

<https://www.purdue.edu/rem/home/booklets/chp2014.pdf> -- web version of Chemical Hygiene Plan manual

- Print out the form under Appendix A and sign after reading the manual.

<http://www.chem.purdue.edu/chemsafety/Training/PPETrain/ppetonline.htm> -- Online Personal Protective Equipment Training

Students are required to go to this website and read items 2, 3, 5, 8, 10 & 13. The student must click the terms (e.g. "chem/bio gloves") and read the training (and repeat for each item listed above). Once the student has read the item, s/he should check the box. After they have read each one, they must fill out the bottom section of the form, identifying the course instructor as supervisor with first and last name. They should then press "submit", and print the certification that shows up and sign it. This form must be provided to the course instructor who must sign it. The student must deliver the two completed certificates to the BCHM Main Office (120).