METHODS: ANALYSES

BIO 6120

SYLLABUS, WINTER, 2017

Credits: 4

Time and Place: W/F 11:20-2:20 Biological Sciences, Room 4156

Instructor: Dr. Penelope I. Higgs
Biological Sciences Building, Room 4121
Phone: 313 577 9241

Goals: Introduction to essential principles in design, execution and analysis of experiments with proteins. Topics that will be covered includes laboratory safety, scientific documentation, development of experimental protocols, error analysis, solutions and buffers, over-expression and purification of proteins, electrophoretic separation of proteins, immunoblots, isoelectric focusing, protein-protein interactions, electrophoretic mobility shift assays and scientific ethics.

Limited to 20 students.

Prereq: BIO 5330 or BIO 6330 or consent of instructor.

Material fee: $50.00

Format: Lectures and lab practicals accessible at:

Lab safety requirement: Lab coat

Contact and communication after lecture or via email: pihiggs@wayne.edu

Office hours: After lecture or by appointment

Textbook: handouts

Supplementary Textbooks (not required):

Kathy Barker: At the Bench: A Laboratory Navigator (Spiral-bound)
TOPICS COVERED

1. Laboratory safety rules
2. Lab notebook management
3. Recombinant protein overexpression
4. Protein affinity purification
5. Immunoblot analysis
6. Co-purification of interacting proteins
7. Bacterial/Yeast Two-hybrid analyses
8. Isoelectric focusing
9. Electrophoretic mobility shift analyses
10. Purification of interaction partners from lysates

LEARNING OBJECTIVES/OUTCOMES

As a result of mastering the materials in this course, you will be able to:

1. Conduct laboratory research under supervision
2. Generate proper documentation of experimental results for academic and industrial settings keeping notebook
3. Perform basic protein purification experiments
4. Perform basic protein characterization experiments
5. Analyze protein architecture in silico
6. Discuss and analyze experimental results

Exams: Class performance will in part be measured in form of one quiz per week. The lowest scoring quiz (this includes missed quizzes) can be dropped. There will be NO makeup exams or bonus points.

Grading: 40% of the final grade will be based on the average score determined for the weekly quiz results. 50% of the final grade will be based on accuracy and organization of the laboratory notebook in which you will document your experimental work during the lab sessions. The laboratory notebook will be submitted for grading after each lab class and returned during lecture each following Monday. 10% of the final grade will be based on presentations and participation in the class.

Cheating policy: A student found to be cheating during an exam (using a “cheat sheet”, looking at another’s paper, or allowing another to look at yours) will receive a zero for that test or report with no opportunity to drop or replace that score. A second episode of cheating will result in a grade of F for the course and may also result in initiation of university disciplinary action.

Add/Drop policy: Add forms will not be signed after the second week of class (except for the purpose of changing lab sections when and if appropriate). Drop forms must be signed before the end of “study day”, which is the day after the last day of classes. Note that “incomplete” grades will not be issued to students in poor standing who are seeking an alternative to late drop.
**Students with disabilities:** If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TDD only). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours to discuss your special needs. Student Disability Services’ mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.

**Credit requirement policy:** Note that prerequisite requirements will be strictly enforced except for cases of extreme urgency, which will be decided on at the instructor’s discretion.