COURSE SYLLABUS

BIOLOGY 5394, SECTION
SPECIAL TOPICS IN GRADUATE BIOLOGY:
BIOCHEMICAL ANALYSIS OF PROTEINS

3 CREDIT HOURS
SPRING 2015
5:00-7:50 TUESDAY, LDB 136

INSTRUCTOR

DEPARTMENT OF BIOLOGICAL SCIENCES
OFFICE:
OFFICE PHONE: (936) 294-
E-MAIL:
OFFICE HOURS: DROP-IN ANYTIME, EMAIL, OR MAKE AN APPOINTMENT

COURSE DESCRIPTION

VARIOUS TECHNIQUES FOR BIOCHEMICAL ANALYSIS OF PROTEIN SAMPLES WILL BE DISCUSSED, INCLUDING DISCUSSION OF PRIMARY LITERATURE ARTICLES DEMONSTRATING THE APPLICATION OF SUCH TECHNIQUES. STUDENTS WILL ALSO PROPOSE AND PERFORM AN EXPERIMENT IN WHICH A PROTEIN SAMPLE OF THEIR CHOICE WILL BE ANALYZED BY ONE OF THESE TECHNIQUES. AN ORAL PRESENTATION OF THE RESULTS OF THIS EXPERIMENT IS REQUIRED.

PREREQUISITES

CELL BIOLOGY, GENETICS, AND BIOCHEMISTRY

METHODS OF INSTRUCTION

LECTURES WILL CONSIST OF DESCRIPTIONS OF VARIOUS TECHNIQUES FOR BIOCHEMICAL ANALYSIS OF PROTEIN SAMPLES. STUDENTS WILL BE ASSIGNED RELATED READING PRIOR TO EACH LECTURE, AND WILL ALSO READ AND PARTICIPATE IN DISCUSSION OF PRIMARY LITERATURE ARTICLES DURING LECTURE MEETING TIMES. STUDENTS WILL CONDUCT LABORATORY WORK UNDER THE SUPERVISION AND GUIDANCE OF THE COURSE INSTRUCTOR.

Course Objectives

- Gain factual knowledge (terminology, classifications, methods, trends) related to biochemical analysis of protein samples
- Learn fundamental principles, generalizations, and theories related to biochemical analysis of protein samples
- Develop technical skills and competencies needed by researchers in the biomedical sciences
- Learn to analyze and critically evaluate experimental data
- Learn how to find and use resources for answering questions or solving problems, particularly for the laboratory portion of the course
- Develop skill in oral expression

Required Materials

Custom Course Textbook:

http://garland.sharedbook.com/serve/ac/garland/student_product_page.html?slug=1418525039_3_305

Attendance Policy

Regular and punctual class attendance is required.

In accordance with the university's attendance policy, students are allowed no more than three hours of absence from class for the academic term.

Methods of Evaluation

Exams (take-home)	2 at 100 pts. each	200 pts.
Participation in Class Discussion		50 pts.
Research Proposal (individual)		50 pts.
Research Oral Presentation (with research partner)		100 pts.

Total		400 pts.

There will be **no extra credit** available in this course.

COURSE GRADES WILL BE DETERMINED BY THE PERCENTAGE OF TOTAL POINTS THE STUDENT HAS EARNED, ACCORDING TO THE FOLLOWING GRADING SCALE:

90-100%	A	60-70%	D
80-90%	B	< 60%	F
70-80%	C		

STUDENTS ARE REQUIRED TO SUBMIT RESEARCH PROPOSALS AND TAKE-HOME EXAMINATIONS AT THE SCHEDULED TIMES. **LATE SUBMISSIONS WILL NOT BE ACCEPTED.**

ALL SCORES WILL BE POSTED ON BLACKBOARD AS SOON AS THEY ARE AVAILABLE. STUDENTS MAY CHECK THEIR PROGRESS IN THE COURSE AT ANY TIME THROUGH THE BLACKBOARD COURSE WEBSITE.

IF A STUDENT BELIEVES THAT AN EXAM OR PAPER HAS BEEN GRADED IN ERROR, OR THAT A SCORE HAS BEEN POSTED INCORRECTLY, THE STUDENT SHOULD CONTACT THE INSTRUCTOR IMMEDIATELY TO DETERMINE IF AN ERROR HAS BEEN MADE. ALL DECISIONS REGARDING THE CHANGE OF A SCORE WILL BE MADE BY THE INSTRUCTOR AND ARE FINAL; HOWEVER, THE INSTRUCTOR WILL PROVIDE THE STUDENT WITH A RATIONALE FOR THE DECISION.

GENERAL EXPECTATIONS

STUDENTS WILL REFRAIN FROM BEHAVIOR IN THE CLASSROOM THAT INTENTIONALLY OR UNINTENTIONALLY DISRUPTS THE LEARNING PROCESS, AND THUS, IMPEDES THE MISSION OF THE UNIVERSITY. CELL PHONES MUST BE TURNED OFF BEFORE THE START OF CLASS. TEXT-MESSAGING IS NOT ALLOWED DURING CLASS. TALKING IS NOT ALLOWED WHILE THE INSTRUCTOR IS LECTURING. STUDENTS WHO ARE DISRUPTIVE WILL BE ASKED TO LEAVE CLASS AND MAY BE REPORTED TO THE DEAN OF STUDENTS FOR DISCIPLINARY ACTION IN ACCORDANCE WITH UNIVERSITY POLICY.

UNIVERSITY POLICIES

FOR UNIVERSITY POLICIES REGARDING ACADEMIC DISHONESTY, STUDENT ABSENCES ON RELIGIOUS HOLY DAYS, STUDENTS WITH DISABILITIES, AND VISITORS IN THE CLASSROOM, PLEASE SEE THE FOLLOWING WEBSITE: HTTP://WWW.SHSU.EDU/SYLLABUS/

COURSE SCHEDULE (TENTATIVE)

DATE:	TOPIC:	CHAPTER(S):
1/20	INTRODUCTION; REVIEW OF PROTEIN STRUCTURE	MBOC 3
1/27	PROTEIN ELECTROPHORESIS (1-D, 2-D, NATIVE, DENATURING)	MBOC 8; POP 2
2/3	CENTRIFUGATION; VELOCITY SEDIMENTATION; EQUILIBRIUM SEDIMENTATION; CHROMATOGRAPHY	MBOC 8; POP 2
2/10	WESTERN BLOTTING; CHEMICAL DEGRADATION; MASS SPECTROMETRY	MBOC 8; POP 3
	EXAM I DUE SUNDAY, FEBRUARY 15TH BY 8 AM	
2/17	DETECTION OF PROTEIN-PROTEIN INTERACTIONS	MBOC 8; POP 7
2/24	DETECTION OF PROTEIN-PROTEIN INTERACTIONS	MBOC 8; POP 7
	PROJECT PROPOSALS DUE SUNDAY, MARCH 1ST BY 8 AM	
3/3	PROTEIN MICROARRAYS; APPLICATIONS OF PROTEOMICS	POP 9; POP 10
3/10	**SPRING BREAK**	
3/17	INDEPENDENT PROJECTS	
	EXAM II DUE SUNDAY, MARCH 22ND BY 8 AM	
3/24	INDEPENDENT PROJECTS	
3/31	INDEPENDENT PROJECTS	
4/7	INDEPENDENT PROJECTS	
4/14	INDEPENDENT PROJECTS	
4/21	INDEPENDENT PROJECTS	
4/28	INDEPENDENT PROJECTS	
5/5	ORAL PRESENTATIONS OF INDEPENDENT PROJECTS (FACULTY WILL BE INVITED)	