COURSE SYLLABUS

BIOLOGY 4490, SECTION 01
CELL BIOLOGY
4 CREDIT HOURS
FALL 2016
LECTURE: TR, 9:30-10:50 AM, LDB 136
LAB: R, 1-3:50 PM, LDB 136

INSTRUCTOR

DR. ANNE GAILLARD
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TEACHING ASSISTANT

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COURSE DESCRIPTION

A STUDY OF EUKARYOTIC CELL STRUCTURE AND FUNCTION, INCLUDING PROTEIN SYNTHESIS, MEMBRANE STRUCTURE AND FUNCTION, INTRACELLULAR TRAFFICKING, CELL COMMUNICATION, CELL MOTILITY, MITOSIS, AND CELL CYCLE CONTROL, WITH EMPHASIS ON THE USE OF MODEL ORGANISMS.

PREREQUISITES

CHEM 1411 AND CHEM 1412; A GRADE OF "C" OR BETTER IN BIOL 1411, BIOL 1413, AND BIOL 2440; BIOL 3450; JUNIOR STANDING OR HIGHER

METHODS OF INSTRUCTION

LECTURES WILL CONSIST OF MATERIAL FROM THE *MOLECULAR BIOLOGY OF THE CELL* TEXTBOOK AND RELATED MATERIAL. LECTURE TOPICS WILL OFTEN BE PRESENTED IN THE CONTEXT OF HUMAN DISEASE. LECTURES WILL BE SUPPLEMENTED WITH DIAGRAMS, ANIMATIONS, AND LIVE CELL RECORDINGS FROM VARIOUS SOURCES. WHENEVER POSSIBLE, STUDENTS WILL HAVE ACCESS TO THE LECTURE SUPPLEMENTS ON THE BLACKBOARD COURSE WEBSITE.

THE LABORATORY PORTION OF THE COURSE WILL PROVIDE STUDENTS WITH HANDS-ON KNOWLEDGE OF EXPERIMENTAL DESIGN, EXPERIMENTAL TECHNIQUES, AND ANALYSIS AND TROUBLESHOOTING OF EXPERIMENTAL RESULTS. EFFECTIVE WRITING SKILLS WILL BE EMPHASIZED THROUGH LABORATORY-BASED STUDENT WRITING ASSIGNMENTS.

COURSE OBJECTIVES

- GAIN FACTUAL KNOWLEDGE (TERMINOLOGY, CLASSIFICATIONS, METHODS, TRENDS) RELATED TO THE STUDY OF CELLS
- LEARN FUNDAMENTAL PRINCIPLES, GENERALIZATIONS, AND THEORIES RELATED TO THE STUDY OF CELLS
- DEVELOP SKILL IN WRITTEN EXPRESSION

REQUIRED MATERIALS

TEXTBOOKS: ALBERTS, B., ET AL. *MOLECULAR BIOLOGY OF THE CELL*. SIXTH EDITION. GARLAND SCIENCE. ISBN 978-0-8153-4432-2

KNISELY, K. *A STUDENT HANDBOOK FOR WRITING IN BIOLOGY*. FOURTH EDITION. MCGRAW HILL. ISBN 1-4641-5076-0

OPTIONAL MATERIALS

TEXTBOOK: WILSON, J. AND T. HUNT. *MOLECULAR BIOLOGY OF THE CELL SIXTH EDITION: THE PROBLEMS BOOK*. GARLAND SCIENCE. ISBN 978-0-8153-4453-7

REQUIRED SUPPLIES

- SCIENTIFIC NOTEBOOK (A BOUND LABORATORY NOTEBOOK)
- PERMANENT MARKING PEN (I.E. SHARPIE®)

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. STUDENTS ABSENT FOR MORE THAN THREE HOURS WILL NOT BENEFIT FROM ANY

ADJUSTMENT IN THE GRADING SCALE WHICH MAY OCCUR WHEN COURSE GRADES ARE CALCULATED AT THE END OF THE TERM.

ATTENDANCE AT THE LABORATORY SESSIONS IS MANDATORY. STUDENTS ARE EXCUSED FROM LAB ONLY IN THE CASES OF EXTREME ILLNESS, DANGEROUS WEATHER CONDITIONS, FAMILY EMERGENCY, OR PARTICIPATION IN A UNIVERSITY-SPONSORED EVENT. STUDENTS MAY BE ASKED TO PROVIDE DOCUMENTATION SUPPORTING THE REASON FOR THE ABSENCE. UNEXCUSED ABSENCES FROM LAB WILL RESULT IN A GRADE OF "F" FOR THE COURSE.

DUE TO THE NATURE OF SCIENTIFIC RESEARCH, STUDENTS MAY OCCASIONALLY BE EXPECTED TO COLLECT DATA AND/OR SET UP CULTURES FOR EXPERIMENTS AT TIMES OTHER THAN SCHEDULED LAB MEETING TIMES.

METHODS OF EVALUATION

LECTURE EXAMS (50% SHORT ANSWER AND ESSAY)	2 AT 100 PTS. EACH	200 PTS.
WRITING ASSIGNMENTS	3 AT 50 PTS. EACH	150 PTS.
LAB PREPAREDNESS AND PARTICIPATION		50 PTS.
COMPREHENSIVE FINAL EXAM		100 PTS.
TOTAL		500 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	60-69%	D
80-89%	B	< 60%	F
70-79%	C		

STUDENTS ARE REQUIRED TO TAKE EXAMINATIONS AT THE SCHEDULED TIMES. MAKE-UP EXAMS WILL BE ALLOWED ONLY IN THE CASES OF EXTREME ILLNESS, DANGEROUS WEATHER CONDITIONS, FAMILY EMERGENCY, OR PARTICIPATION IN A UNIVERSITY-SPONSORED EVENT. **STUDENTS MUST NOTIFY THE INSTRUCTOR WITHIN 24 HOURS OF A MISSED EXAM IN ORDER TO SCHEDULE A MAKE-UP EXAM.** STUDENTS MAY BE ASKED TO PROVIDE DOCUMENTATION SUPPORTING THE REASON FOR THE ABSENCE.

WRITING ASSIGNMENTS ARE DUE BY 8:00 PM ON THE DUE DATE AND MUST BE SUBMITTED ELECTRONICALLY VIA BLACKBOARD. WRITING ASSIGNMENTS SUBMITTED AFTER THAT TIME WILL NOT BE ACCEPTED.

EXAM AND WRITING ASSIGNMENT SCORES WILL BE POSTED ON BLACKBOARD AS SOON AS THE SCORES 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 WRITING ASSIGNMENT HAS BEEN GRADED IN ERROR, OR THAT AN EXAM OR WRITING ASSIGNMENT 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/

LECTURE SCHEDULE (TENTATIVE)

WEEK OF:	TOPIC:	CHAPTER(S):
8/22	INTRODUCTION	---
8/29	EVOLUTION; MODEL ORGANISMS; PROTEIN STRUCTURE	1, 3
9/5	PROTEIN STRUCTURE; PROTEIN FUNCTION	3
9/2	MEMBRANE STRUCTURE; MEMBRANE TRANSPORT	10, 11
9/19	MEMBRANE TRANSPORT	11
	EXAM I, IN LAB, THURSDAY, SEPTEMBER 29TH	**1, 3, 9, 10, 11**
9/26	INTRACELLULAR COMPARTMENTS AND PROTEIN SORTING	12
10/3	INTRACELLULAR MEMBRANE TRAFFIC	13
10/10	CELL SIGNALING	15
10/17	CELL SIGNALING	15
10/24	THE CYTOSKELETON	16
	EXAM II, IN LAB, THURSDAY, NOVEMBER 3RD	**12, 13, 15, 16**
10/31	THE CYTOSKELETON	16
11/7	THE CYTOSKELETON; THE CELL CYCLE	16, 17
11/14	THE CELL CYCLE; CELL DEATH	17, 18
11/21	CANCER	20
11/28	CANCER; STEM CELLS	20, 22

FINAL EXAM, THURSDAY, DECEMBER 8TH, 9:30-11:30 AM

LABORATORY SCHEDULE (TENTATIVE)

DATE:	TOPIC:	CHAPTER(S):
8/25	----------	
9/1	MICROSCOPY	9
9/8	SDS-PAGE, WESTERN BLOTTING, AND PROTEOMICS	
9/15	SDS-PAGE, WESTERN BLOTTING, AND PROTEOMICS	
9/22	SDS-PAGE, WESTERN BLOTTING, AND PROTEOMICS	
9/29	**LECTURE EXAM I**	**1, 3, 9, 10, 11**
	WRITING ASSIGNMENT #1 DUE FRIDAY, OCTOBER 9TH	
10/6	PHAGOCYTOSIS IN *TETRAHYMENA*	
10/13	PHAGOCYTOSIS IN *TETRAHYMENA*	
	WRITING ASSIGNMENT #2 DUE FRIDAY, OCTOBER 23RD	
10/20	EXPRESSION, PURIFICATION, AND ANALYSIS OF DHFR	
10/27	EXPRESSION, PURIFICATION, AND ANALYSIS OF DHFR	
11/3	**LECTURE EXAM II**	**12, 13, 15, 16**
11/10	EXPRESSION, PURIFICATION, AND ANALYSIS OF DHFR	
11/17	EXPRESSION, PURIFICATION, AND ANALYSIS OF DHFR	
11/24	**THANKSGIVING HOLIDAY**	
12/1	EXPRESSION, PURIFICATION, AND ANALYSIS OF DHFR	
	WRITING ASSIGNMENT #3 DUE FRIDAY, DECEMBER 2ND	

TIPS FOR SUCCESS

- TAKE THOROUGH CLASS NOTES (INCLUDING THE NUMBERS OF THE FIGURES AND TABLES THAT ARE PRESENTED DURING LECTURE)
- ASK QUESTIONS IN CLASS
- READ THE ASSIGNED CHAPTERS IN THE TEXTBOOK
- STUDY YOUR NOTES DAILY
- COME TO LAB PREPARED
- SEEK HELP FROM YOUR INSTRUCTOR EARLY (IF NEEDED)
- START WRITING ASSIGNMENTS EARLY
- PREPARE FOR EXAMS EARLY