CELL CULTURE AND ADVANCED BIOTECHNOLOGY (BIOL 4860 -001 and -002)
SYLLABUS
F 1:00 – 1:50, 2:00-4:50 pm; Room N334

Instructor: Dr. Katherine M. Schroeder
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Office hours: TR: 2:00 -3:00 or by appointment, room N252
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Prerequisite: BIOL 3350 or BIOL 3310, CHEM 1100, CHEM 1110, or equivalents; and consent of instructor.

Scope of course

Introduction to tissue culture techniques for analysis of cells under normal and experimental conditions. Emphasis will be placed on application of these techniques for elucidating basic biological functions and their utilization in biotechnology research. Primary focus will be on animal cells.

Materials required

- Hardbound notebook (An inexpensive student notebook will suffice).

Grading

	Percent of final grade
Exam 1	30
Exam 2	30
Oral presentation	20
Paper write-up	10
Lab notebook	10

Exams

- Short answer, multiple choice, matching, filling in blanks

Lab notebook

- Each student will be responsible for maintaining a lab notebook throughout the semester (details provided in class).

Paper write-up

- Each student will write a "mini paper" based on the research performed in class, following the format of a primary research article (details provided in class).

Oral presentation

- Each group of four will lecture on relevant, advanced biotechnology/ies and will present one or two papers from the primary literature in which the technology was employed (details provided in class). Each student will be graded individually.

Final grade

93-100% = A	87-89% = B+	77-79% = C+	67-69% = D+
90-92% = A-	83-86% = B	73-76% = C	60-66% = D
	80-82% = B-	70-72% = C-	0-59% = F

Tentative Course Outline			
Week	**Date**	**Lecture**	**Lab**
1	1/30	course overview; biosafety	asceptic technique, safety quiz
2	2/6	asceptic technique	subculturing
3	2/13	background: biology of cells	expansion; cell viability assay
4	2/20	types of tissue culture	cryopreservation
5	2/27	research project background	dose-response: plate 1
6	3/6	recent advances in tissue culture technologies	fix, gather data 1; plate 2
7	3/13	EXAM 1	fix, gather data 2; plate 3
8	3/20	lab layout and equipment	fix, gather data 3; analyze data
9	3/27	culture environment: media, gases, culture vessels	plate for reverse transcriptase (RT)-PCR; design primers
10	4/3	culture environment: proliferation, differentiation, quantitation	RT-PCR
11	4/10	Spring Break!	Spring Break!
12	4/17	culture environment: characterization, contamination	run, analyze DNA gel
13	4/24	fluorescence microscopy and immunostaining	writing research article
14	5/1	oral presentations	oral presentations
15	5/8	Warrior Day! no class	Warrior Day! no class
16	5/15	EXAM 2	write-up due