

Techniques in Molecular Biochemistry (CBCH 4310) - CRN 13246 Fall 2016

Prerequisites: CHEM 4330, CBCH 3414 or instructor approval.

Course Director: Dr. Kyle L. Johnson; BRB 3.148; 747-6889; kljohnson@utep.edu

Participating Faculty Members: Drs. Igor Almeida, Marc Cox, Sid Das, Arshad Khan, Kyle Johnson, Manuel Llano, Manuel Miranda, Germán Rosas-Acosta, Charles Spencer, Jianjun Sun, Armando Varela, and Nathan VerBerkmoes.

Office Hours (Dr. Johnson): Bioscience Research Building, Room 3.148, TR 1:30-2:50, or by appointment.

Lecture: TR 3:00-4:20 pm

Location: Liberal Arts (LART), Room 305.

Required textbook: Alberts, *et al.*, *Molecular Biology of the Cell*, 5th or 6th Edition, (Also required for Dr. Das's CBCH course). Each instructor may also assign additional topic-specific papers at his/her discretion.

Course Objectives: This is a team-taught course aimed at providing an overview of research methods and techniques in modern molecular biology and molecular biochemistry laboratories.

At the completion of this course, the students are expected to have achieved these specific learning objectives:

1. Understand the basic approaches used for the analysis and purification of the most important macromolecules and organelles of the eukaryotic cell.
2. Understand the principles underlying the approaches indicated above.
3. Be able to apply their knowledge of these techniques in the design of experimental procedures aimed at testing specific hypotheses.

Assessment of Course Objectives: A learning outcomes evaluation (self-assessment) will be handed out for you to complete at the same time that the course evaluation forms are completed.

Course Activities/Assignments:

Weekly end-of-topic (EOT) project: Each week, at the end of each specific topic covered in class, the instructor in charge will provide an in-class or take home project to evaluate the student's command of the topics covered on that specific topic. Although different instructors may choose to use a different type of project, all end-of-topic projects will be assigned the same value toward the final

grade of the course. Each such assignment will be due on the date announced by the individual instructor. These projects and your in-class participation comprise 100% of your grade.

Grading: Grading is NOT based on a curve. You will each EARN a grade that reflects the effort you put into the course and the knowledge you have gained. Your grade will be based on a comprehensive assessment of your skills and their development throughout the course of the semester. All instructors will evaluate each weekly topic with a participation score and an end-of-topic project; each such unit will count equally toward your final grade. Grading scale: A=90-100%; B=80-89%; C=70-79%; D=60-69%; F is <60%.

Make-up Policy:

Weekly projects: you may make up any ONE missed project if you have a written medical justification signed by a physician. Any additional missed projects will receive scores of zero (0).

Absence and Drop Policy: It is your responsibility to attend class regularly. If you have a serious illness or a legitimate excuse (includes military personnel called to active duty or training) for being out of town, make arrangements with me before you leave. To receive an automatic "W", students must drop or withdraw from this class by the **October 28** drop date, as indicated in the academic schedule.

Academic Integrity Policy: It is the official policy of the University of Texas at El Paso that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Please see the Office of Student Conduct and Conflict Resolution (OSCCR) website at <http://sa.utep.edu/osccr/> for details.

Civility Statement: Please be respectful of all students' right to learn without disruption. In keeping with this statement, please make an active effort to keep the talking to a minimum during lectures and presentations. Also make an active

effort to either turn cell phones off or turn them to vibrate mode prior to the start of class.

Disability Statement: If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, by email to cass@utep.edu, or go to Union Building East, Room 106. For additional information, please visit the CASS website at <http://www.utep.edu/CASS>. CASS' Staff are the only individuals who can validate and if need be, authorize accommodations for students with disabilities.

Class Schedule:

#	Day/Date	Topics	Instructor	Reading
1	T Aug. 23	Nucleic acid purification and analysis	K. Johnson	Ch. 4, 8
2	R Aug. 25			
3	T Aug. 30	Nucleic acid sequencing	K. Johnson	Ch. 8
4	R Sept. 1			
3	T Sept. 6	Protein quantitation and analysis	M. Miranda	Ch. 6, 8
4	R Sept. 8			
5	T Sept. 13	Prokaryotic expression vectors	J.J. Sun	Ch. 6, 8
6	R Sept. 15	Protein purification and chromatography		Ch. 6, 8
7	T Sept. 20	Eukaryotic expression vectors	G. Rosas-Acosta	Ch. 8
8	R Sept. 22	Post-translational modifications		Ch. 6, 12
9	T Sept. 27	Genome editing	M. Llano	Ch. 7, 8
10	R Sept. 29			
11	T Oct. 4	Confocal Microscopy	A. Varela	Ch. 9
12	R Oct. 6			
13	T Oct. 11	Mass spectrometry/proteomics & other -omics/Bioinformatics	I. Almeida	Ch. 10
14	R Oct. 13		N. VerBerkmoes	Ch. 10
15	T Oct. 18			
16	R Oct. 20			
17	T Oct. 25	Viral diagnostics & treatment	K. Johnson	TBA
18	R Oct. 27			
19	T Nov. 1	Nuclear receptor signaling	M. Cox	Ch. 11-12, 20
20	R Nov. 3			
21	T Nov. 10	Lipid isolation & analysis	S. Das	Ch. 10
22	R Nov. 12			
23	T Nov. 17	Bacterial diagnostics & treatment	C. Spencer	TBA
24	R Nov. 19			
25	T Nov. 22	TBA	TBA	TBA
--	R Nov. 24	Thanksgiving Break - no classes	--	--
26	T Nov. 29	Immunostaining	A. Khan	Ch. 9
27	R Dec. 1			