

Techniques in Molecular Biochemistry (CBCH 4310) Fall 2014 (CRN 13881)

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: Dr. Igor Almeida, Dr. Marc Cox, Dr. Sid Das, Dr. Kristine Garza, Dr. Arshad Khan, Dr. Kyle Johnson, Dr. Manuel Llano, Dr. Manuel Miranda, Dr. German Rosas-Acosta, Dr. Charles Spencer, Dr. Jianjun Sun, and Dr. Armando Varela.

Office Hours (Dr. Johnson): Bioscience Research Building, Room 3.148, MW 3:30-5:30, or by appointment.

Lecture: TR 3:00-4:20 pm

Location: Education Building, Room 313

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.

Textbook: Alberts, *et al.*, Molecular Biology of the Cell, Fifth Edition. Each instructor may also assign additional topic-specific papers at his/her discretion.

Course Activities/Assignments:

End-of-topic (EOT) project: 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.

Grading: All instructors will evaluate their section with an end-of-topic project, each of which will count equally toward the final grade. No final exam will be administered. Grading scale: A=90-100%; B=80-89%; C=70-79%; D=60-69%; F is <60%.

Make-up Policy: You may make up any ONE missed end-of-topic 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. **November 1** is the last day students may drop with an automatic "W".

Academic Integrity Policy: UTEP's policies regarding academic integrity apply in this course. Information on this policy can be found at <http://academics.utep.edu/Default.aspx?tabid=23785>.

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 a student has or suspects he/she has a disability and needs an accommodation, he/she should contact the Disabled Student Services Office (DSSO) at 747-5148 or at dss@utep.edu or go to Room 106 Union East Building. The student is responsible for presenting to the instructor any DSS accommodation letters and instructions.

Class Schedule:

#	Day/Date	Topics	Instructor	Reading
1	T Aug. 26	Nuclear receptor signaling	M. Cox	Ch. 11-12, 20
2	R Aug. 28			
3	T Sept. 2	Prokaryotic expression vectors	J.J. Sun	Ch. 6, 8
4	R Sept. 4	Protein purification and chromatography	J.J. Sun	Ch. 6, 8
5	T Sept. 9	Protein quantitation and analysis	M. Miranda	Ch. 6, 8
6	R Sept. 11			
7	T Sept. 16	Nucleic acid purification and analysis	K. Johnson	Ch. 4, 6, 8
8	R Sept. 18			
9	T Sept. 23	Eukaryotic expression vectors	G. Rosas-Acosta	Ch. 8
10	R Sept. 25	Post-translational modifications	G. Rosas-Acosta	Ch. 6, 12
11	T Sept. 30	Genome editing	M. Llano	Ch. 7, 8
12	R Oct. 2			
13	T Oct. 7	Viral diagnostics & treatment	K. Johnson	TBA
14	R Oct. 9			
15	T Oct. 14	Bacterial diagnostics & treatment	C. Spencer	TBA
16	R Oct. 16			
17	T Oct. 21	Mass spectrometry/proteomics & other -omics	I. Almeida	Ch. 10
18	R Oct. 23			
19	T Oct. 28	Bioinformatics	I. Almeida	Ch. 10
20	R Oct. 30			
21	T Nov. 4	Lipid isolation and analysis	S. Das	Ch. 10
22	R Nov. 6			
23	T Nov. 11	Immunostaining	A. Khan	Ch. 9
24	R Nov. 13			
25	T Nov. 18	Confocal Microscopy	A. Varela	Ch. 9
26	R Nov. 20			
27	T Nov. 25	TBA	TBA	TBA
--	R Nov. 27	Thanksgiving Break - no classes	--	--
28	T Dec. 2	Flow cytometry, cell sorting	K. Garza	Ch. 17
29	R Dec. 4			