

Techniques in Molecular Biochemistry (CBCH 4310) - CRN 13535 Fall 2015

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, MW 1:30-2:50, or by appointment.

Lecture: TR 3:00-4:20 pm

Location: Chemistry & Computer Science Building (CCSB), Room 1.0202.

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. These projects comprise 50% of your grade.

Exams: The course will have two exams, a mid-term and a non-comprehensive final, which comprise a total of 50% of your grade. Each exam will favor the most recent set of material; however ALL MATERIAL COVERED TO DATE could be included in any evaluation. **Exam 1 (October 6)** will evaluate the material covered from August 25 to October 1. **Exam 2 (December 10)** will evaluate the material covered from October 8 to December 3.

Grading: All instructors will evaluate each weekly topic with an end-of-topic project, each of which will count equally toward the remaining 50% of your final grade. Grading scale: A=90-100%; B=80-89%; C=70-79%; D=60-69%; F is <60%.

Make-up Policy:

EOT projects: 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). **Exams:** If you know ahead of time that you will not be able to take an exam on the scheduled date, notify me as soon as possible and I will allow you to take the exam earlier with no penalty. If you miss an exam and you can provide PROOF for your reasonable absence, the exam will be rescheduled at my convenience. If you miss the exam, and you cannot provide proof for your absence, you will NOT be allowed to make it up.

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. **October 30** 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. 25	Nucleic acid purification and analysis	K. Johnson	Ch. 4, 6, 8
2	R Aug. 27			
3	T Sept. 1	Viral diagnostics & treatment	K. Johnson	TBA
4	R Sept. 3			
5	T Sept. 8	Protein quantitation and analysis	M. Miranda	Ch. 6, 8
6	R Sept. 10			
7	T Sept. 15	Prokaryotic expression vectors	J.J. Sun	Ch. 6, 8
8	R Sept. 17	Protein purification and chromatography		Ch. 6, 8
9	T Sept. 22	Eukaryotic expression vectors	G. Rosas-Acosta	Ch. 8
10	R Sept. 24	Post-translational modifications		Ch. 6, 12
11	T Sept. 29	Genome editing	M. Llano	Ch. 7, 8
12	R Oct. 1			
13	T Oct. 6	Exam 1	K. Johnson	--
14	R Oct. 8	Confocal Microscopy	A. Varela	Ch. 9
15	T Oct. 13			
16	R Oct. 15			
17	T Oct. 20	Mass spectrometry/proteomics & other -omics/Bioinformatics	I. Almeida	Ch. 10
18	R Oct. 22		N. VerBerkmoes	Ch. 10
19	T Oct. 27			
20	R Oct. 29			
21	T Nov. 3	Bacterial diagnostics & treatment	C. Spencer	TBA
22	R Nov. 5			
23	T Nov. 10	Lipid isolation & analysis	S. Das	Ch. 10
24	R Nov. 12			
25	T Nov. 17	Nuclear receptor signaling	M. Cox	Ch. 11-12, 20
26	R Nov. 19			
27	T Nov. 24	TBA	TBA	TBA
--	R Nov. 26	Thanksgiving Break - no classes	--	--
28	T Dec. 1	Immunostaining	A. Khan	Ch. 9
29	R Dec. 3			
30	R Dec. 10	Exam 2 - 4:00 to 6:45 pm	K. Johnson	--