



Spring 2010 – 2011

American University of Beirut  
Faculty of Arts and Sciences  
Department of Biology

## BIOLOGY 260 CELL BIOLOGY

Rabih Talhouk, Ph.D.  
Cell & Molecular Biology  
Office: Rm 119; Biol Dept  
Office hrs: M 1:15–2:15 pm,  
W 12:00 – 1:00  
F 3:00–4:00 pm  
Phone: 961-1-374374 ext 3895  
Fax: 961-1-351706  
E-mail: [rtalhouk@aub.edu.lb](mailto:rtalhouk@aub.edu.lb)  
<http://staff.aub.edu.lb/~webbiol/>

Credits: 4 credits (3.3; 4cr.)  
Pre-requisites: Biol 220, 223  
Lect Schedule: 11-12 MWF  
& 3hrs/lab/wk

Lab Instructor:  
Dr. H. Rizkallah

### Course Description – Biol 260 – Cell Biology

The cell biology course provides a basic understanding of the structure and function of cellular organelles and components, and the functional interaction of the cell with its microenvironment. The course stresses a novel approach to the study of the cell within its social context and imparts onto students the concept that the cell is no longer perceived as “the smallest unit of function” but it is rather the cell and its microenvironment, including neighboring cells, the extracellular matrix (ECM) and the soluble mediators. The concept of “dynamic reciprocity” is stressed throughout the course, in brief, imparting on students that the cell regulates the composition of its microenvironment which in turn dictates cell function. Classes are centered on discussion oriented lectures to encourage critical thinking and emphasize the significance of research as a tool to achieve knowledge. The laboratory part exposes students to an overview of modern cell-related techniques and hands on experience to classical cell biology experiments.

## GENERAL INSTRUCTIONAL OBJECTIVES (GIO)

Students should have acquired the

- 1- knowledge of basic concepts of cell biology and of those properties that are common to most eukaryotic cells.
- 2- ability to analyze and interpret the behavior of cells in their microenvironment in multi-cellular organisms (i.e. a cell within its social context) with emphasis on cell-cell interactions, cell-extra cellular matrix interactions, and soluble signaling.
- 3- capacity to solve problems and evaluate the relevance of experimental data
- 4- evidence-based critical thinking in cell biology
- 5- appreciation of the depth and scope of the ever developing field of cell biology. “The more the students know about the cell, the more they know how little they know”.

## SPECIFIC LEARNING OUTCOMES (SLO)

At the conclusion of the course the student will be able to

- 1- demonstrate, in writing and discussion, proficiency in understanding classical and advanced concepts in cell biology. (Meets GIO # 1 and 2)
- 2- design experimental models to address specific mechanistic questions in cell biology. (Meets GIO # 3 and 4)
- 3- analyze scientific work and experimental results in of cell biology. (Meets GIO 4)
- 4- judge published work in the field of cell biology. (Meets GIO # 4 and 5)
- 5- appreciate how much remains to be known about the “smallest unit of function” ... the cell and its microenvironment. Students will accumulate throughout the semester and communicate in writing or discussion a list of topics that they wish to learn more about. (Meets GIO # 5)

## TEXTBOOK & READING MATERIAL:

- 1- Molecular Biology of the Cell (MBC). Fifth Edition, 2008  
Alberts, Johnson, Lewis, Raff, Roberts, Walter
- 2\* - Recent literature (suggested readings), and Web sites
- 3- CELL BIOLOGY INTERACTIVE CD-ROM (2008)
- 4- AUB Biol 260 (Cell Biology) Moodle material

## ASSESSMENT TOOLS

EXAM I:	16%	April 1,	2011; Friday	6:00pm
EXAM II:	16%	May 6,	2011; Friday	6:00pm
Project (Disc Rooms)	8 %	<i>(see Moodle/Project)</i>		
LAB:	23%			
D-Qzs/Disc/Knowledge	7 %			
FINAL EXAM:	30%	As scheduled	Comprehensive	

## COURSE OUTLINE:

Week **	Topic	WebCT or	Chapter MBC (Alberts <i>et al</i> )
1	I- Introduction	1 & 2	
	II- Tools & methods used in cell biology	<i>Covered in Laboratory</i>	8 & 9
	III-Molecular organization of cells		
2 – 4	a- The Plasma Membrane	3, 4, & 5	10 & 11
4 – 7	b- Intracellular Sorting & Maintenance of Cellular Compartments*	6 to 9	12, 13, & 14
7	c- The cellular Nucleus, Nuclear Matrix & Gene Expression		6 & 7 EXAM I (Inclusive)
8 – 9	d- The Cytoskeleton*	10 to 14	16
	IV- The cell microenvironment		
9 – 11	a- Extra Cellular Matrix (ECM) & Integrins*	15	19 EXAM II (Inclusive)
11 - 12	b- Cell Adhesion, Cell Junction & Cell Communication*	16 to 19	15 & 19
	V- Cells in their social context		
13	a- Cell Cycle	20 & 21	17
14	b- Development of Multicellular Organisms	22 & 23	22
15	c- Cancer & Apoptosis*	24 & 25	18, 20
?	VI- Other topics of interest*		“2B” determined FINAL EXAM (Comprehensive)

\*\* Week # refers to week of “instruction”, i.e. excluding holidays.

## COURSE POLICY:

1. ATTENDANCE. You are urged to attend all classes so you do not miss on the material presented in class and in turn the students can benefit from your contribution to class discussions. In case of absence from any class, you are required to cover the material missed and inquire about any announcements made during your absence. IF ATTENDANCE RECORD IS LESS THAN 80% OF LECTURES, YOU MAY BE DROPPED FROM THE COURSE (see AUB catalogue, FAS-Attendance).
2. EXAMS: NO MAKE-UP EXAMS. ANY MISSED EXAM WILL BE ADDED TO THE FINAL EXAM (i.e. final will become 46%). IF YOU MISS BOTH EXAMS (I & II), YOU WILL RECEIVE 0% ON ONE AND THE OTHER ADDED ON TO THE FINAL EXAM.
3. DROP QUIZZES: Several drop quizzes will be administered throughout the semester. The total contributions of the drop quizzes would amount up to 7% of your final grade. If you miss any drop quiz without a valid excuse, you will get a zero. No preparation is required for drop quizzes. The questions are of a conceptual nature and can be attended to in working groups within the classroom environment. They are meant to encourage discussion and enhance your awareness in a specific field of knowledge in cell biology.
4. DISCUSSIONS ROOMS. (WebCT-based) With your group, you should select a discussion issue (list will be provided) of interest to you. Read articles and other resources available to you as per the WebCT posted instructions, research about the issue you selected. Prepare discussion questions that would focus your session. Share the discussion postings with others in your group. Discussions should be interactive and involving.
5. CODE OF CONDUCT: Students are expected to respect their colleagues' presence in a classroom setting and not to infringe on their rights for acquiring knowledge and for promoting an environment conducive for excellence of instruction (i.e. refrain from side conversations, avoid arriving late to class and avoid use of mobile phones, others ...)
6. ACADEMIC INTEGRITY. The heart of the teaching profession is integrity. Any violation of academic integrity will not be tolerated and will result in serious repercussions. Please refer to AUB Policies and Procedures on academic integrity. <http://pnp.aub.edu.lb/university/handbook/158010044.html>

