
FACULTY OF ARTS AND SCIENCES
BIOLOGY 225 - MOLECULAR BIOLOGY

TTH 11:00 am – 12:15 pm

Physics Building - Room 219



Instructor	Rabih Talhouk, PhD
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AUB phone extension	3895
Office hours	M 12:15 – 1:15 pm W 12:00 – 1:00 pm F 4:00 – 5:00 pm

COURSE DESCRIPTION

BIOL 225 - Molecular Biology; 3 cr. Occasionally. A course that introduces the different techniques of molecular biology and recombinant DNA technology, and discusses the most recent advances in the field. Prerequisite: BIOL 223.

A BLENDED COURSE:

To enhance learning outcomes and student's critical thinking abilities in molecular biology, the course will be partly taught, for the first time this year, in a problem-based blended learning format. This is a teaching approach which combines classroom teaching (face to face, F2F) with online teaching. Adopting this approach, approximately 1/3 of the course learning will take place through online interactions. As such during the last 4 wks of the course there will be 2-3 F2F sessions during regular class sessions and out-of-class online activities.

Technical assistance is available through acc@aub.edu.lb. Alternatively, for course content related assistance contact rtalhouk@aub.edu.lb

COURSE INSTRUCTIONAL OBJECTIVES

- To provide an understanding of genes and their activities at the molecular level
- To reinforce and expand on basic concepts in molecular biology along with experiments that led to those concepts

- To highlight the most recent developments in molecular biology and introduce their potential therapeutic applications

COURSE LEARNING OUTCOMES

At the completion of this course, a student will be able to:

- Understand and use proper terminology and notations in basic and applied molecular biology
- Demonstrate a comprehensive understanding of basic concepts and principles in molecular biology
- Understand and describe standard molecular biology techniques
- Understand the therapeutic potential and describe latest applications of molecular biology in gene therapy and peptidemimetic therapy

RESOURCES AVAILABLE TO STUDENTS

- Required Textbook: David P. Clark, & Nanetter J. Pazadernik, 2010; Biotechnology, Update Edition – Academic Press Cell (AP Cell)
- Robert F. Weaver, 2008, Molecular Biology, Fourth Edition – McGraw-Hill International Edition. (Supplement reading)
- Additional course material will be made available on the Moodle system at AUB.*
- Recent literature (suggested readings) and Web sites required for the project assignments will be available through AUB's library resources and internet access.*

**The course material is tentative and may be subject to change during this semester after consulting with the students registered for the course.*

COURSE MATERIAL - SCHEDULE

Topic	*****	Week
Introduction to Course Contents & to Blended Learning		1
The nucleus and nucleolus; role in regulation of gene expression		1-2
Recombinant DNA and RNA-based technologies		3-4
Introduction of DNA into mammalian cells		4
Nanobiotechnology		5-6
Exam I		April 6

Regulation of gene expression in pro and eukaryotic cells	6-7
Transgenic animals	8
Gene therapy	9
Genomics	9
Proteomics	10
Exam II	May 4
Blended Learning:	May 3 – 26
Group work on wiki page for critical assessment of published work and devising follow up experiments	11 - 12
Online group-based discussion forums of recent topics in molecular biology	13 - 14
*** TECHNICAL ASSISTANCE ***	
For all matters pertaining to technical assistance in the blended part of the course please feel free to contact acc@aub.edu.lb	
Final Exam	As per Schedule

COURSE EVALUATION & GRADE DISTRIBUTION

Exam I	25%	Wednesday, April 6; 5:00 pm	
Exam II	25%	Wednesday, May 4; 5:00 pm	
Project (Blended)	25%**		
Drp Qzs/Disc.	8%		
Final Exam	17%	- to be announced	Selected Topics

** Students are graded for the blended part of the course according to a rubric that will permit assessment of the quality, relevance, impact on peers, and frequency of their participation in the wiki-page or discussion forums.

COURSE POLICIES

- **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).

- **Exams:** NO MAKE-UP EXAMS. ANY MISSED EXAM WILL BE ADDED TO THE FINAL EXAM (i.e. final will become 42%). IF YOU MISS BOTH EXAMS (I & II), YOU WILL RECEIVE 0% ON ONE AND THE OTHER ADDED ON TO THE FINAL EXAM.
- **Drop quizzes:** Several drop quizzes will be administered throughout the semester. The total contributions of the drop quizzes would amount up to 8% 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. Please note that up to 3% maybe for participation in classroom discussions.
- **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 ...)
- **Class Etiquette:** Students are expected to respect their classmates' presence in the classroom and online environments and not to infringe on their rights to acquiring knowledge and maximizing opportunities for productive interaction and active listening. They must abide by **netiquette** and refrain from side conversations, avoid use of mobile phones, etc. This is all in the spirit of promoting excellence of instruction and learning.
- **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>