

Brooklyn College of the City University of New York  
Department of Biology  
**Biol 2010 – Advanced Cellular and Molecular Biology**

Lecturer:

Office Hour:

This course is an in-depth introduction to the biology of the cell with emphasis on molecular aspects of biology. We will visit and revisit molecular composition and functions of the cell as well as interactions of molecules as it relates to cell signaling, the cell cycle, apoptosis and cancer. We will also emphasize cellular energetics, information storage and transfer, protein synthesis, growth, reproduction, and functional integration of cellular organelles and inclusions.

**Textbook:** *Essential Cell Biology* 6<sup>th</sup> edition by Alberts et. al. Published by W. W. Norton and Company

**NOTE:** *If you have access to another text that covers the same material you are free to use it instead. Also, the 5<sup>th</sup> edition can be used. It is cheaper.*

**Course Goals and Learning Objectives:**

By the end of this course students will:

- improve their understanding of the key molecular mechanisms at play inside a cell.
- be able to explain the main techniques used to study cellular and molecular components.
- read and understand general scientific articles on molecular and cellular phenomena.
- explain to anyone what a cell is and how it works.

**Student Learning Outcomes**

1. Increase student understanding of the biological complexity of the cell through the study of the molecular and cellular mechanisms which underlie life.
2. Identify the principal molecules of the cell (DNA, RNA, protein), their interaction with one another, with other cellular components and with other cells.
3. Develop a more in-depth knowledge of the molecular and cellular basis of homeostasis, cell division, cell cycle control, apoptosis and cancer.
4. Evaluate important technological advances and discoveries with respect to
  - a. impact on the environment
  - b. impact on society

## **Course lecture schedule-Subject to change**

Week 1: Chapters 1 and 5

Introduction, course, syllabus, grading  
Overview  
DNA and Chromosomes

Week 2: Chapter 6 and 9

DNA Replication, Repair and Recombination, Genomic Evolution

Week 3: Chapter 7

RNA Molecules  
Transcription

Week 4: Chapters 7 and 8

Translation  
Regulating Gene Expression

Week 5: Chapter 4

Protein Structure and Function

Week 6: Chapter 11

Membranes

Week 7: Chapter 12

Transport Across the Cell Membrane

Week 8: Chapter 15

Protein Trafficking

Week 9: Chapter 17

Cytoskeleton

Week 10: Chapter 16

Cell Signaling

Week 11: Chapter 18

Cell Division Cycle and Control

Week 12: Chapter 20

Cell Communities  
Development

Week 13: Chapters 18 and 20

Cancer  
Apoptosis

Week 14: Presentations

**Please note: This syllabus serves as a guide for lectures. The lecturer may make changes as the semester progresses. If changes are made, an announcement will be made in class and/or posted on Blackboard.**

### ***Outcomes assessment***

#### **Course grading**

The final course grade will be based upon students' performance in lecture exams concept maps and presentations. The grade breakdown is as follows:

Exams: 3 exams @ 20% each

Presentations: 1 group presentation @20%

Group Assignments/Concept maps: 20%

**Midterm Exam Dates:** TBA. The final is TBD.

***Make-up exams: There are no make-up exams.*** If you miss one exam, you will take a cumulative final which will count for 50% of your grade. Failure to take 2 exams constitutes an F for the course.

#### **Attendance Policy**

**You are expected to attend lecture AND you are expected to be on time. While attendance is not specifically a percentage of your final grade I can assure you, your final grade is in part a reflection of your attendance. You will not get credit for group work if you come late. All group work will take place at the beginning of the lecture.**

#### **Other Policies/Considerations**

**Use of cell phones during lecture is forbidden. This includes texting. If you are found to be using a cell phone during group work or lecture, you will be deducted 1 point from your final grade for each infraction.**

**The use of computers for the sole purpose of taking notes is not recommended but is allowed. The lecturer retains the right to reverse permission if it is found that the computers are being used for other purposes such as Facebook, email or shopping.**

#### ***Grade Distribution (Please note: There is no curving of grades at the end of the semester)***

97.45--100 = A+

92.45--97.44 = A

89.45--92.44 = A-

87.45--89.44 = B+

82.45--87.44 = B

79.45--82.44 = B-

77.45--79.44 = C+

72.45--77.44 = C

64.45--72.44 = C-

<64.45 = F

#### **PLEASE NOTE:**

***There are no negotiations for grades.*** Your grade is the sum of the components listed above. There are no extra credit, make-up, or "pity" points. It is expected that you give

100% effort in all your endeavors including this course. Therefore, there are no extra points for “working hard”.

### **How to succeed in Biology:**

#### ***-Participate in a study group on a weekly basis.***

-Attend all lectures.

-Read the textbook and handouts **BEFORE** class.

-Review your class notes as soon as possible after lecture and immediately before lecture.

-Complete all assignments and turn them in on time. **Late assignments are not accepted.**

***-Know the vocabulary!*** The study of biology is like learning a new language. You need to know the vocabulary in order to understand the concepts. If you come across a word you don't know, ***look it up!***

-Get a good night's sleep before an exam.

### **Accommodations for Students with Disabilities**

The Center for Student Disability Services (CSDS) is committed to ensuring students with disabilities enjoy an equal opportunity to participate at Brooklyn College. In order to receive disability-related academic accommodations, students must first be registered with CSDS. Students who have a documented disability or suspect they may have a disability are invited to schedule an interview by calling (718) 951-5538 or emailing [Josephine.Patterson@brooklyn.cuny.edu](mailto:Josephine.Patterson@brooklyn.cuny.edu) If you have already registered with CSDS, email [Josephine.Patterson@brooklyn.cuny.edu](mailto:Josephine.Patterson@brooklyn.cuny.edu) or [testingcsds@brooklyn.cuny.edu](mailto:testingcsds@brooklyn.cuny.edu) to ensure accommodation emails are sent to your professor.

### ***Academic Integrity Policy***

The faculty and administration of Brooklyn College support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both. The complete text of the CUNY Academic Integrity Policy and the Brooklyn College Page 4 of 7 procedure for policy implementation can be found at [www.brooklyn.cuny.edu/bc/policies](http://www.brooklyn.cuny.edu/bc/policies). If a faculty member suspects a violation of academic integrity and, upon investigation, confirms that violation, or if the student admits the violation, the faculty member **MUST** report the violation. Students should be aware that faculty may use plagiarism detection software.