NJIT BIOLOGY

Course Syllabus

FALL 2023

BIOL 201 Foundations of Biology - Cellular/Molecular Biology

FACE-to-FACE COURSE

INSTRUCTOR:	Dr. Mary Konsolaki	**EMAIL:**	mary.konsolaki@njit.edu
OFFICE:	CKB 340D 973-642-4975	**OFFICE HOURS:**	Tue 11:30-1:30pm (F2F) or by appointment (virtual)
COURSE SCHEDULE:	CKB 204 Tue-Fri 10:00am-11:20am	**COURSE WEBSITE:**	https://njit.instructure.com/courses/29551

ATTENDANCE

Attendance is mandatory for this class and will be monitored through short in-class quizzes online. Attendance of 85% of lectures earns full attendance credit for the course. You will need to have a computer or a cell phone in order to complete these quizzes online. If you expect to miss a class for a valid reason, please email Dr. Konsolaki and provide documentation (mary.konsolaki@njit.edu)

COURSE DESCRIPTION: This course surveys the chemical components and structure of the cell and methods of study; thermodynamics and metabolism; membrane biology, energy utilization and transfer; protein and nucleic acid structure and function; transcription, translation, gene regulation and cell signaling and communication. This course is complemented by the laboratory course 120:202 Foundations of Biology: Cell and Molecular Biology: Laboratory. Both courses 120:201 and 120:202 must be taken concurrently, although they are separate courses with their own grades.

PREREQUISITES:

Concepts in Biology BIOL200, and Chemistry BIOL121 or BIOL125

LEARNING OBJECTIVES

Through selected readings, lectures, discussions and occasional group activities, students are encouraged to learn on their own about the main processes taking place in the cell from a molecular perspective. After successfully completing the course, students will have

- ✓ the ability to describe the general structure of biomolecules as well as their role in cellular metabolism and the flow of genetic information;
- ✓ information and concepts on bioenergetics and the use of energy by cells;
- ✓ the information on the principles of membrane transport mechanisms and their role in important physiological processes at the organismal level;
- ✓ acquired concepts and general principles on gene expression and its regulation;
- ✓ knowledge on the concepts and general principles on eukaryotic signal transduction;
- ✓ the skills to read, interpret and apply general information in the fields of cell and molecular biology;
- ✓ evaluate contemporary hypotheses on the functional mechanisms of the cell;
- ✓ reinterpret and/or postulate alternative hypotheses or ideas to explain or describe the phenomena studied in the course;

- ✓ the opportunity to explore the topics covered in the course in higher level classes which require Foundations 201/202 as pre-requisites in the biology major and minor.

INSTRUCTIONAL MATERIALS: Alberts, Hopkin, Johnson, Morgan, Raff, Roberts, Walter ***Essential Cell Biology*, 5th Edition**, W.W. Norton & Company, NY. ISBN: 978-0393680362
https://wwnorton.com/books/9780393680362

Some additional reading may be occasionally assigned from the following online resources (free text): Harvard University MCB https://projects.iq.harvard.edu/lifesciences1abookv1

It is imperative that students log into the Canvas course page (https://njit.instructure.com/courses/29551) on a regular basis so that they are updated on assignments, lecture slides, exams and announcements.

SUPPLEMENTAL MATERIALS: Any additional materials required for class would either be provided through Canvas (UCID required), or via web link.

CODE OF STUDENT CONDUCT: Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu

REASONABLE ACCOMMODATION: If you have a special need that may require an accommodation or assistance, please inform me of that fact as soon as possible and no later than the end of the second class meeting. Students with disabilities who require accommodations must contact Dr. Phyllis Bolling, Center for Counseling and Psychological Services (C-CAPS), Campbell Hall, (entry level), room 205, (973) 596-3420

COURSE EVALUATION	
Lecture Exam 1	20% (100pts)
Lecture Exam 2	20% (100pts)
Homework and other assignments	10% (50pts)
Review Quizzes (3)	10% (50pts)
Project	10% (50pts)
Attendance & participation	5% (25pts)
Final Exam	25% (125pts)
TOTAL	**100% (500pts)**

Grading Scale			
A	90-100	C	65-74
B+	85-89	D	50-64
B	80-84	F	0-49
C+	75-79		

Late work: Work submitted late will be penalized with a 10% per day reduction.

Extra Credit: There will be no individualized opportunities for extra credit. There may be extra credit opportunities for the entire class during or at the end of the semester.

COURSE SCHEDULE

Dates listed by week; lectures will meet twice every week, unless otherwise noted. Homework assignments will be due on Saturday midnight, on Canvas, and review quiz assignments will be due on Sunday midnight.

Week	Lecture Topic	Readings	Assignments Due
9/5	Unity of Life / Chemical bonds	Chapter 1	No HW
9/12	Small molecules / Macromolecules	Chapter 2	HW1 (Canvas)
9/19	Energy, catalysis / Biosynthesis	Chapter 2 & 3	HW2 (Canvas)
9/26	How proteins work / How are proteins regulated	Chapter 3 & 4	Review Quiz 1 (Canvas)
10/3	Exam 1/Structure of DNA	Chapter 4	No HW
10/10	Chromosomes / Regulation of chromosome structure	Chapter 5	HW3 (Canvas)
10/17	From DNA to RNA / From RNA to protein	Chapter 7	HW4 (Canvas)
10/24	Control of gene expression I / Control of gene expression II /	Chapter 7 & 8	HW5 (Canvas)
10/31	Post transcriptional regulation / Exploring gene function/ Project discussion	Chapter 8	HW6 (Canvas)
11/7	Exam 2 / Membranes	Chapter 10	Review Quiz 2 (Canvas)
11/14	Membrane transport / Transporters / Intracellular Compartments/Protein transport	Chapter 11	HW7 (Canvas) Project will be released
11/21	Thanksgiving recess week		HW8 (Canvas)
11/28	Vesicular transport/ Cell signaling	Chapter 12 Chapter 15	HW9 (Canvas)
12/5	GPCRs/ Enzyme coupled receptors	Chapter 16	HW10 (Canvas)
12/12	Cytoskeleton	Chapter 17	Review Quiz 3 (Canvas) Project due
12/19	Exam 3 (Final) **TBD**		Final Exam Schedule: http://www5.njit.edu/registrar/exams/

Please note that this is the proposed schedule and is subject to change. A more detailed schedule will be continually updated via the course Canvas site (https://njit.instructure.com/courses/29551).