

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 1:00-3:00pm (F2F) or by appointment (virtual)
COURSE SCHEDULE:	GITC 1400 Mon -Thu 2:30-3:50pm	COURSE WEBSITE:	https://njit.instructure.com/courses/44116

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: [NJIT Academic Integrity Code](#).

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.

GENERATIVE AI:

This course expects students to work without artificial intelligence (AI) assistance in order to better develop their skills in this content area. As such, AI usage is not permitted throughout this course under any circumstance.

STUDENT ABSENCES FOR RELIGIOUS OBSERVANCE:

Students must notify their instructors in writing of any conflicts between course requirements and religious observances, ideally by the end of the second week of classes and no later than two weeks before the anticipated absence.

ATTENDANCE

Attendance is required in all lectures and will be recorded through an in-class Canvas Quiz. The Quiz will be only counted for completion (not correctness). Attendance and Participation counts for 5% of the final grade and 85% attendance is sufficient for full credit. For the Department of Biology policy on missed classes, please visit <https://biology.njit.edu/policy-absences>

REASONABLE ACCOMMODATION:

If you have a special need that may require an accommodation or assistance, please inform your instructor 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 the Center for Counseling and Psychological Services (C-CAPS), Campbell Hall, (entry level), room 205, (973) 596-3420

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.

LETTERS OF RECOMMENDATION

I am very happy to write letters of recommendation on behalf of my students. I find that these letters are most effective when I have opportunities to meet with the student on one-on-one basis because I can write a stronger letter that includes real examples of the strengths and abilities of the student. To this effect, I am asking students to follow the guidelines below:

1. have attended two of my classes, one of which should be Biol201 (Foundations-MCB) or Genetics Biol352.
2. Have attended office hours during the semester that they were in my class
3. Send me a CV, current transcript and personal statement

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		

COURSE SCHEDULE

Dates listed by week; lectures will meet twice every week, unless otherwise noted. Homework assignments will be due on Sunday midnight, on Canvas, and review quiz assignments will be due the day before each exam. 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/44116>)

Week	Lecture Topic	Readings	Assignments Due
1/20	Unity of Life / Chemical bonds	Chapter 1	No HW
1/27	Small molecules / Macromolecules	Chapter 2	HW1 (Canvas)
2/3	Energy, catalysis / Biosynthesis	Chapter 2 & 3	HW2 (Canvas)
2/10	How proteins work / How are proteins regulated / In class group activity	Chapter 3 & 4	Review Quiz 1 (Canvas)
2/17	Structure of DNA/ Exam 1	Chapter 5	HW 3 (Canvas)
2/24	Chromosomes / Regulation of chromosome structure	Chapter 5	HW4 (Canvas)
3/3	From DNA to RNA / From RNA to protein	Chapter 7	HW5 (Canvas)
3/10	Control of gene expression I / Control of gene expression II	Chapter 7 & 8	HW6 (Canvas)
3/17	NJIT Spring break – no classes		
3/24	Post transcriptional regulation / In class group activity	Chapter 8	HW7 (Canvas)

3/31	Exploring gene function / Exam 2	Chapter 10	Review Quiz 2 (Canvas)
4/7	Project discussion / Membranes	Chapter 11	HW 8 (Canvas) Project will be released
4/14	Membrane transport / Transporters / Intracellular Compartments/ Protein transport /	Chapter 12 Chapter 15	HW 9 (Canvas)
4/21	Vesicular transport/ Cell signaling	Chapter 16	HW10 (Canvas)
4/28	GPCRs / Enzyme coupled receptors	Chapter 17	Project due
5/5	ECM / ConnectiveTissue / Cell Junctions	Chapter 20	Review Quiz 3 (Canvas)
5/12	Exam 3 (Final) TBD		Final Exam Schedule: http://www5.njit.edu/registrar/exams/