NJIT BIOLOGY

Course Syllabus

FALL 2019

BIOL 201 Foundations of Biology - Cellular/Molecular Biology

INSTRUCTOR:	Dr. Mary Konsolaki	**EMAIL:**	mary.konsolaki@njit.edu
OFFICE:	CKB 340D ▪ 973-642-4975	**OFFICE HOURS:**	Wednesday 11am-1pm or by appt
COURSE SCHEDULE:	**Section 001**: CKB 204 Mon-Wed 8:30-9:50am **Section 003**: CKB 217 Mon-Thu 1:00-2:20pm	**COURSE WEBSITE:**	https://njit.instructure.com/courses/2635

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, and genetic regulation. 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:
21:120:200 Concepts in Biology, and 21:160:115 General Chemistry.

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):
1. Scitable by Nature education http://www.nature.com/scitable/topic/genetics-5
2. Pubmed eBook https://www.ncbi.nlm.nih.gov/books/NBK21475/?term=Cell%20biology

SUPPLEMENTAL MATERIALS: iClicker (please bring to every class), 3x5 notecards (in-class assignments will be handed in most classes. They must be 3x5 to stack correctly, no paper ripping). A couple different colors of pen or pencil are sometimes helpful in diagramming problems.

Any additional materials required for class would either be provided through Canvas (UCID required), handed out in class, or via web link.

CODE OF STUDENT CONDUCT: Be aware of the rules set forth in the University Code on Academic Integrity. In brief, the instructor will not allow cheating or plagiarism.

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

Attendance: Students are expected to attend all meetings of the course. Clicker questions, 3x5 notecards and sometimes quizzes will be used as a measure of attendance. If you expect to miss a class for a valid reason, please email Dr. Konsolaki and provide documentation (marykonsolaki@njit.edu)

COURSE EVALUATION PROCEDURES:

Lecture Exam 1	20%
Lecture Exam 2	25%
Homework and other assignments	10%
Quizzes (3)	15%
Attendance and participation	5%
Final Exam	25%
TOTAL	**100%**

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

Extra Credit: There will be no individualized opportunities for extra credit. There may be opportunities for the entire class during the course.

COURSE SCHEDULE

Schedule: Dates listed by week; lectures will meet twice every week, unless otherwise noted. Homework assignments will be due on Wednesdays or Thursdays before class, on Canvas. 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.

Week	Lecture Topic	Readings	Assignments Due
9/2	No Monday class/Units of Life	Chapter 1	No HW
9/9	Chemical bonds/Small molecules-Macromolecules	Chapter 2	Pre-test (in class)/HW1 (Canvas)
9/16	Energy, catalysis/Biosynthesis	Chapter 3	HW2 (Canvas)
9/23	How proteins work/ How are proteins controlled and studied	Chapter 4	Quiz 1 (Canvas)
9/30	Exam 1/ Structure of DNA and chromosomes	Chapter 5	HW3 (Canvas)
10/7	Regulation of chromosome structure/ DNA replication and repair	Chapter 5 Chapter 6	HW4 (Canvas)
10/14	From DNA to protein/ Control of gene expression - I	Chapter 7 Chapter 8	HW5 (Canvas)
10/21	Control of gene expression – II/Cloning-sequencing	Chapter 8 Chapter 10	Quiz 2 (Canvas)
10/28	Exploring gene function /Exam 2	Chapter 10	HW6 (Canvas)
11/4	Membrane structure and function/ Transmembrane transport	Chapter 11 Chapter 12	HW7 (Canvas)
11/11	Transporters (and maybe ion channels)/ Breakdown of sugars and fats	Chapter 12 Chapter 13	HW8 (Canvas)
11/18	Regulation of metabolism /Wed-Thu No Class (Thanksgiving)	Chapter 13	HW9 (Canvas)
11/25	Mitochondria/Chloroplasts	Chapter 14	HW10 (Canvas)
12/2	Intracellular compartments/ Protein transport	Chapter 15	Quiz 3 (Canvas)
12/9	Tissues, stem cells, cancer/Review	Chapter 20	No HW
12/16	Exam 3/Post-test - During Final Exam Period*		Final Exam Schedule: http://www5.njit.edu/registrar/exams/