NJIT BIOLOGY

Course Syllabus

SPRING 2020

BIOLOGY 201 (002): FOUNDATIONS OF BIOLOGY: CELLULAR & MOLECULAR BIOLOGY

INSTRUCTOR:	Dr. Mary Konsolaki	**EMAIL:**	mary.konsolaki@njit.edu
OFFICE: **PHONE:**	340D Central King Bldg. 973-642-4975	**OFFICE HOURS:**	Wed. 11:00AM- 1:00PM or email for appointment
COURSE SCHEDULE:	MW: 8:30 AM- 9:50AM (002)	**COURSE WEBSITE:**	http://canvas.njit.edu
COURSE LOCATION:	Section 002 (GITC 1100)		

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** 120:201 and 120:202 **must** be taken concurrently, although they are separate courses with their own grades.

Course Goal: Students will understand how the major principles of Cellular and Molecular Biology determine the functioning of genetic regulation.

PREREQUISITES: Concepts in Biology (BIOL 200 or R120 200), and General Chemistry (CHEM 121 or CHEM 125).
CO-REQUISITE: Foundations of Cellular and Molecular Laboratory (BIOL 202).

Course Website: Canvas, login with your NJIT UCID. If you are a Rutgers student, you will need an NJIT UCID to get access to the site. If you do not already have one, you can request one at https://servicedesk.njit.edu/CherwellPortal/IST?_=13d06385. **Everyone: please be sure that you have gone into your profile and changed your preferred e-mail to an account you check regularly.** You will automatically be assigned an NJIT e-mail address and this will be the default unless you change it.

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COURSE OBJECTIVES:

Students are able to:

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

1. the ability to describe the general structure of biomolecules as well as their role in cellular metabolism and the flow of genetic information;
2. information and concepts on bioenergetics and the use of energy by cells;
3. the information on the principles of membrane transport mechanisms and their role in important physiological processes at the organismal level;
4. acquired concepts and general principles on gene expression and its regulation;
5. knowledge on the concepts and general principles on eukaryotic signal transduction;
6. the skills to read, interpret and apply general information in the fields of cell and molecular biology;
7. evaluate contemporary hypotheses on the functional mechanisms of the cell;
8. reinterpret and/or postulate alternative hypotheses or ideas to explain or describe the phenomena studied in the course;
9. 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.

REQUIRED MATERIALS:

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

Some additional reading may be occasionally assigned from the following online resources (free text):
Scitable by Nature education http://www.nature.com/scitable/topic/genetics-5
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.

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GRADING POLICY & SCALE: Grades will be determined by performance on exams, quizzes, and class participation. Grades will be determined by the percentage of the possible points earned, following the standard grade scale below. Grades are not curved and do not ask for extra credit. Your grades will be posted to Canvas so you can keep track of your progress in the course.

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

Letter Grade	Percentage
A	90 – 100
B+	85 – 89
B	80 – 84
C+	75 – 79
C	65 – 74
D	50 – 64
F	0 - 49

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

Late Work: Work submitted late will be penalized with a 10% per day reduction. That rule does not apply to assignments that are released to students after the due date.

ACADEMIC INTEGRITY: There is zero tolerance for academic dishonesty in this course which includes both cheating and plagiarism. The punishment for dishonesty in this course will be a zero on the assignment and a consultation with the Dean of Students after which further action may be required. Please ask me if you have any questions. The University's academic integrity policy can be found here.

Accommodations: 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

ELECTRONICS / CELL PHONE POLICY: The use of cell phones is **NOT** allowed in class. Please silence your cell phones during class.

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 (mary.konsolaki@njit.edu)

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COURSE OUTLINE: ***TENTATIVE 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
1/20	No Monday class/Units of Life	Chapter 1	**No HW**
1/27	Chemical bonds / Small molecules / Macromolecules	Chapter 2	**Pre-test (in class)/HW1 (Canvas)**
2/3	Energy, catalysis / Biosynthesis	Chapter 3	**HW2 (Canvas)**
2/10	How proteins work / How are proteins controlled and studied	Chapter 4	**Review Quiz 1 (Canvas)**
2/17	Structure of DNA and chromosomes / Exam 1	Chapter 5	**HW3 (Canvas)**
2/24	Regulation of chromosome structure / DNA replication and repair	Chapter 5 Chapter 6	**HW4 (Canvas)**
3/2	From DNA to protein / Control of gene expression I	Chapter 7 Chapter 8	**HW5 (Canvas)**
3/9	Control of gene expression II / Genome evolution	Chapter 8 Chapter 9	**Review Quiz 2 (Canvas)**
3/16	Spring Break		**No HW**
3/23	Mobile genetic elements / Exploring gene function	Chapter 9 Chapter 10	**HW6 (Canvas)**
3/30	Exam 2/ Membranes	Chapter 11	**HW7 (Canvas)**
4/6	Membrane transport / Transporters / Intracellular Compartments/Protein transport	Chapter 12 Chapter 15	**HW8 (Canvas)**
4/13	Cell signaling I, II	Chapter 16	**HW9 (Canvas)**
4/20	Cell signaling III / Tissues	Chapter 16 Chapter 20	**HW10 (Canvas)**

4/27	Stem Cells/Cancer / Cytoskeleton	Chapter 20 Chapter 17	**Review Quiz 3 (Canvas)**
5/4	**Review / Exam 3/Post-test during Final Exam Period***		**Final Exam Schedule:** https://www5.njit.edu/registrar/exams/

****DO NOT SCHEDULE TRAVEL DURING THE FINAL EXAM PERIOD****