NJIT BIOLOGY

Course Syllabus

FALL 2019

BIOLOGY 352 - 001: GENETICS

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:	TR: 4:00 PM- 5:20PM	**COURSE WEBSITE:**	http://canvas.njit.edu
COURSE LOCATION:	CKB G08		

COURSE DESCRIPTION: This course surveys the basic concepts of Genetics. We plan to start the course with a detailed examination of classical genetics experiments beginning with those of Mendel, followed by a study of DNA structure and manipulation. Further lectures in the course will focus on some of the details of molecular genetics, developmental genetics, and population genetics.

OBJECTIVES: To provide the student with: (1) knowledge of terms, concepts and theories of Genetics (2) the ability to integrate the material from multiple sources and research (3) improved critical thinking skills and the opportunity to apply genetic concepts in everyday biology-related applications.

PREREQUISITES: Foundations of Cellular and Molecular Lecture and Laboratory (BIOL 201 and BIOL 202 or R120 201 and R120 202) and Foundations of Ecology and Evolution Lecture and Laboratory (BIOL 205 and BIOL 206 or R120 205 and R120 206).

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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THE TOPICS TO BE COVERED WILL INCLUDE:

- Introduction to Molecular Genetics
- DNA Structure and Manipulation
- Mendelian Genetics
- Sex-chromosomes and Sex-linkage
- Genetic Linkage and Chromosome Mapping
- DNA Replication and Recombination
- Molecular Organization of Chromosomes
- Human Karyotypes and Chromosome Behavior
- Microbial Genetics
- Gene Expression
- Regulation of Gene Expression
- Genomics, Proteomics and Transgenics
- Genetic Control of Development
- Mutations and DNA Repair
- Genetics of Cell Cycle and Cancer
- Mitochondrial DNA and Extranuclear Inheritance
- Population Genetics
- Quantitative Genetics

INSTRUCTIONAL MATERIALS:

Genetics Essentials, Fourth Edition (2018) Benjamin A. Pierce. Students can purchase a 6-month subscription to the E-book, ISBN: 9781319189051 (most affordable option). Below is the link for the different options:
https://store.macmillanlearning.com/us/product/Genetics-Essentials/p/1319107222?searchText=genetics%26%23x20%3bessentials

Some additional reading may be occasionally assigned from the following online resources (free text):

2. Scitable by Nature education http://www.nature.com/scitable/topic/genetics-5
3. Pubmed eBook http://www.ncbi.nlm.nih.gov/books/NBK21766/?term=Genetics

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%
Exam 1	20%
Exam 2	25%
Homework & other assignments	10%
Quizzes	15%
Exam 3	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.

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 us 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 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 of	Lecture Topic	Assignments Due
9/2	Introduction to Genetics/Chromosomes	Pre-test
9/9	Basic principles of heredity/Sex-linked traits	HW1 (Canvas)
9/16	Extensions & modifications of basic principles	HW2 (Canvas)
9/23	Human genetics/Chromosome variations	**Quiz 1** on Canvas
9/30	Linkage & recombination/Mapping of human genes	HW3 (Canvas)
10/7	**Exam 1**/Chemical nature of DNA	HW4 (Canvas)
10/14	Chromosome structure/DNA replication	HW5 (Canvas)
10/21	Transcription/Central Dogma/Viruses	HW6 (Canvas)
10/28	Translation/Epigenetics/Cancer	**Quiz 2** on Canvas
11/4	Molecular Techniques/**Exam 2**	HW7 (Canvas)
11/11	Bacterial & Eukaryotic gene regulation	HW8 (Canvas)
11/18	RNA regulation/ Mutations	HW9 (Canvas)
11/25	Transposable elements / Wed Class / Thu No Class (Thanksgiving)	HW10 (Canvas)
12/2	Quantitative/Populations/Developmental genetics	**Quiz 3** on Canvas
12/9	The-omics era/Review	No HW
12/16	**Exam 3**/Post-test - During Final Exam Period*	Final Exam Schedule will be posted here: http://www5.njit.edu/registrar/exams/

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