NJIT BIOLOGY

Course Syllabus

FALL 2025

BIOLOGY 352 GENETICS
FACE-to-FACE CLASS

INSTRUCTOR	Dr. Michael Nelson	**EMAIL:**	michael.nelson@njit.edu
OFFICE:	CKB 339-A	**OFFICE HOURS:**	Tuesday 11:30am – 12:50pm Or by appointment
COURSE SCHEDULE:	CKB G-08 Tuesday and Thursday 4:00pm - 5:20pm	**COURSE WEBSITE:**	https://canvas.njit.edu/

ATTENDANCE: Attendance at all class sessions is expected. We devote a lot of in-class time to guided questions and exercises. You will not do well on exams if you miss class. If you expect to miss a class for a valid reason, submit a Student Absence Verification form to the dean of students.

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.
PREREQUISITES: Foundations of Biology: Cell and Molecular Bio, BIOL201 and BIOL202 with grade C or better.
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
INSTRUCTIONAL MATERIALS: Genetics Essentials, Fifth Edition (2021) Benjamin A. Pierce. Students can purchase a 6-month subscription to the E-book, ISBN: 9781319356279 (most affordable option). Below is the link for the different options:
https://www.macmillanlearning.com/college/us/product/Genetics-Essentials/p/1319244920
Some additional reading may be occasionally assigned. Additional readings will be posted to Canvas.
SUPPLEMENTAL MATERIALS: Any additional materials required for class will be provided through Canvas (UCID required).
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.

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 on the assignment, an F in the course, 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 accommodation or assistance, please inform us of that fact as soon as possible and no later than the end of the second class meeting.

Students with disabilities who require accommodation must contact Dr. Phyllis Bolling, Center for Counseling and Psychological Services (C-CAPS), Campbell Hall, (entry level), room 205, (973) 596-3420

GENERATIVE AI: BECAUSE you will be learning foundational skills and concepts in this course, I expect you to work without artificial intelligence (AI) assistance. As AI becomes better, it is increasingly difficult for me to discern whether work is a student's own or the product of AI, therefore take-home work is worth a relatively small portion of your total grade. If I discover that you have used AI on an assignment, you will be referred to the Dean of Students for a violation of academic integrity. Problems on homework assignments form the basis for the content covered on the exams. If you use AI to do the homework, you won't be prepared to do well on the exams.

COURSE EVALUATION PROCEDURES:

GRADING ITEM	WEIGHT
Exam 1	25%
Exam 2	25%
Exam 3 (Final)	25%
Project	10%
Homework	10%
In-class quizzes	5%
TOTAL	**100%**

GRADING SCALE	
A	90 - 100
B+	87 - <90
B	80 - <87
C+	77 - <80
C	70 - <77
D	60 - <70
F	<60

Homework Assignments: There are question sets covering material from the lecture and readings. They will usually be made available on Fridays, and you will have one week to complete them.

Late work: Work submitted late will be penalized with a **20% per day reduction** and assignments more than 5 days late will not be accepted. Extensions may be granted under extenuating circumstances on a case-by-case basis. If you are struggling to complete an assignment by the due date, it is essential that you reach out to me before the assignment is due.

Exams: there will be two midterms and one final exam. Exams cover material from lectures, required readings, assignments, and in-class quizzes and group activities.

Make-up Exams: Make-up exams are given only under exceptional circumstances such as an excused absence. Arrangements for a make-up exam must be made before the exam date. If you have to miss an exam, you must reach out to me to make arrangements before the scheduled exam date.

COURSE SCHEDULE

Schedule: Dates listed by week; lectures will meet twice every week, unless otherwise noted. Homework assignments will be due on Sunday midnight, on Canvas. 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 Topics	Required Readings	Assignments Due
1 (9/1)	Introduction to Genetics, Chromosomes	Pierce: Ch. 1 and 2	
2 (9/8)	Heredity and Extensions	Pierce: 3.1 – 3.4 Pierce: 4.1 – 4.4	
3 (9/15)	Heredity and Extensions	Pierce: 3.5 Pierce: 4.5 – 4.6 FlyLab JS - Introduction	QS1
4 (9/22)	Linkage Chromosome Variations	Pierce: 5.1 – 5.3 Pierce: 6.1 – 6.3	QS2
5 (9/29)	Chromosome Variations, No class on Thursday (wellness day)	Pierce: 6.3 – 6.4	FlyLab Group Assignment QS3
6 (10/6)	Exam Review Exam 1 (10/9)		
7 (10/13)	Bacterial and Viral Genetics DNA	Pierce: 7.1 – 7.5 Pierce: 8.1 – 8.3	
8 (10/20)	DNA DNA Replication	Pierce: 8.4 – 8.6 Pierce: 9.1 – 9.2	QS4
9 (10/27)	Replication, Recombination Transcription	Pierce: 9.3 – 9.5 Pierce: 10.1 – 10.3	*Project Assignment 1* QS5
10 (11/3)	Transcription Translation	Pierce: 10.4 – 10.5 Pierce: 11.1 – 11.3	QS6
11 (11/10)	Exam Review Exam 2 (11/13)		
12 (11/17)	Gene Regulation Mutations and DNA Repair	Pierce: 12.1 – 12.4 Pierce: 13.1 – 13.4	*Project Assignment 2*
13 (11/24)	Molecular Genetic Techniques / No class on Thursday	Pierce: 14.1 – 14.5	QS7
14 (12/1)	Genomics Cancer Genetics	Pierce: 15.1 – 15.4 Pierce: 16.1 – 16.4	QS8
15 (12/8)	Quantitative Genetics Population Genetics	Pierce: 17.1 – 17.4 Pierce: 18.1 – 18.7	*Project Assignment 3* QS9
	Exam 3 (Final) **Date TBD**		Do not make travel plans until the final exam schedule is published!