

BIOLOGY 352-001: GENETICS

INSTRUCTOR:	Dr. Thomas Pietri	PHONE:	973-596-5649
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OFFICE HOURS:	By Appointment Only (Email)	COURSE WEBSITE:	http://moodle.njit.edu/
COURSE SCHEDULE:	T,R: 2:30PM– 3:55PM, , CKB 204		

COURSE DESCRIPTION: The science of genetics, launched with the rediscovery of Mendel's Principles of inheritance in 1900, is very much in the news. Within the subject of Genetics there are more areas than can be covered in a semester. The basic concepts will be covered in a broad introductory survey course. 1) Transmission genetics in higher organisms, using classical analysis of crosses. 2) Molecular genetics in the DNA age, the molecular nature of the gene and gene expression. This includes the biochemical nature, function and organization of the genetic material using the approaches of molecular genetics. 3) Population genetics and the distribution of genes in real populations.

LEARNING OBJECTIVES: Upon successful completion of this course, students will:

- Describe experimental work utilized in unraveling the biochemical properties of genes and how they relate to the mechanisms of heredity.
- Describe experimental evidence leading to determine polynucleotides as the genetic material.
- Describe chromosomal aberrations and their causes; point mutations; maternal and other extra nuclear inheritance processes; epigenetics and other factors modifying phenotype.
- Describe the several types of recombination mechanisms and appreciate them as the basis for genetic diversity.
- Learn how organismal and population genetics interplay with the environment in evolutionary processes
- Analyze and interpret scientific writing.

PREREQUISITES: Foundations of Biology: Cell & Molecular Biology Lecture & Lab. (R120:201/202), Foundations of Biology: Ecology and Evolution (BIOL 205/206) with a grade of C or better.

REQUIRED MATERIALS:

- ⊕ No Required Text.
- ⊕ Readings will be suggested during the course.

COURSE WEB PAGE: We will use [Moodle](#) for coursework submission, for announcements, and for various activities. To use Moodle students must have an NJIT UCID. If you are matriculated at NJIT you should already have a UCID. If you are a Rutgers student you may already have one. You can check by following the directions here: <https://ist.njit.edu/ucid/>. If you do not have one you can request one here: <https://newacct.njit.edu/~accts/cgi-bin/new> or call the NJIT helpdesk for assistance (973- 596- 2900).

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GRADING:

Tentative grading scale: While adjustments will be made before the final grade is issued, the initial grading scale to be used in determining your final grade is:

Assignments	Percentage
Participation	10%
Group paper presentation	15%
Exam 1	25%
Exam 2	25%
Exam 3	25%
Total	100%

Letter Grade	Percentage
A	90 – 100
B+	85 – 90
B	80 – 85
C+	75 – 80
C	70 – 75
D	60 – 70
F	0 - 60

BIOLOGY 352 COURSE POLICIES:

- ⊕ **Attendance and Participation:** Attendance to class is mandatory. I expect you to arrive in time and participate in class and during class discussions (see below). Your grade will depend on both individual effort and group activities.
- ⊕ **Assignments:** After the first exam, you will have a group presentation once a week. Everyone will have to read the assigned papers, not only the group presenting them to the class; a discussion will follow the presentation.
- ⊕ **Makeup Policy:** Make up exams will only be approved for official reasons (e.g. physician's note, dean's letter, religious reason). If you have a serious reason for missing an exam, you must contact me BEFORE the scheduled exam.
- ⊕ **Academic Integrity:** Students are reminded of the Honor Code each **you agreed to upon** entering NJIT. Violations of Academic Integrity will be dealt with according to the guidelines indicated in the [NJIT Academic Honor Code](#). Please re-read Article III of the [Honor Code](#), which describes conducts that are considered unacceptable (cheating, violating the US Copyright law, etc.).
- ⊕ **Cellular Phones:** All cellular phones and beepers must be switched off during all class times.
- ⊕ **Conduct in class:** The NJIT forms a diverse community. Please be courteous with each other. Offensive or discriminatory remarks or comments based on race, ethnicity, gender, physical or mental disability, sexual orientation, gender identity and religion will not be tolerated.

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COURSE OUTLINE: TENTATIVE (SUBJECT TO CHANGE)

DAY	DATE	TOPIC
T	5-Sept.	Introduction to the course.
R	7-Sept.	Status of the field. A bit of history.
T	12-Sept.	Transmission of genetic information: Mitosis and Meiosis
R	14-Sept.	Transmission of genetic information: Mendelian Genetics I
T	19-Sept.	Transmission of genetic information: Mendelian Genetics II
R	21-Sept.	Transmission of genetic information: Sex determination
T	26-Sept.	Transmission of genetic information: Linkage and Mapping
R	28-Sept.	EXAM1
T	3-Oct.	Molecular genetics: Physical storage of information
R	5-Oct.	Molecular genetics: Molecular aspect of transmission
T	10-Oct.	Molecular genetics: Molecular aspect of expression
R	12-Oct.	Group paper presentation
T	17-Oct.	Molecular genetics: Molecular aspect of genetic regulation
R	19-Oct.	Group paper presentation
T	24-Oct.	Molecular genetics: Mutation and DNA repair
R	26-Oct.	Group paper presentation
T	31-Oct.	Molecular genetics: Mitochondrial DNA and extra nuclear inheritance; epigenetics
R	2-Nov.	EXAM 2
T	7-Nov.	Technology
R	9-Nov.	Group paper presentation
T	14-Nov.	Evolutionary mechanisms
R	16-Nov.	Group paper presentation
T	21-Nov.	Evolutionary mechanisms
R	28-Nov.	Group paper presentation
T	30-Nov.	Quantitative and Population genetics
T	5-Dec.	Group paper presentation
R	7-Dec.	Quantitative and Population genetics
T	12-Dec	Group paper presentation
FINAL EXAM PERIOD: DECEMBER 15-21,2017		

EXAM 3 DATE IS TBD *DO NOT MAKE ANY TRAVEL ARRANGEMENTS DURING THIS TIME *****