

## Bio 111 Principles of Biology Laboratory

Prerequisite: MAT 010 (formerly MAT 1604) and Eng 091 (formerly ENG 1301) or ESL 091 (formerly ESL1301)

Co-requisite – BIO110 Principles of Biology Lecture

1 credit 2 hrs. laboratory

Meets:	
Email:	
Office: A-507C	
Phone:	
Contact Policy:	

### Course description:

This course is designed to give students an overview of the principles of biology that apply to living organisms. Topics examined will include the structure and function of the cell, diffusion and osmosis, types of plant and animal tissues, molecular biology, and animal reproduction and development. The laboratory illustrates the concepts discussed in the lecture. This course is for non-science major students. Offered in Spanish and English.

### By the end of this course, students should be able to

- Differentiate between problems that are subject to scientific inquiry (factual problems), and the ones that are subject to non-scientific thought (i.e. moral problems).
- Apply the scientific method to problem solving.
- Demonstrate general acquaintance with basic biological molecules and their principal roles in living organisms.
- Recognize the role of various cell structures and processes associated with them, such as cell metabolism, osmosis, and diffusion in supporting life and describe them in general terms.
- Compare cells of different tissue types and make connections between tissue types and their function in a living organism.
- Identify different organs and organ systems and describe their functions.
- Recognize general pathways of an organism's internal environment regulation.
- Identify basic structures involved in storage and expression of genetic information.
- Describe two variants of cell division (mitosis and meiosis); their role in supporting life of organism; reproduction; and inheritance.
- Explain how genetic information is passed from generation to generation based on the laws of Mendelian genetics.
- Students will be able to explain how genetic information is passed from generation to generation based on non-Mendelian genetic principles.
- Compare and contrast the costs and benefits of sexual and asexual reproduction.
- Compare the advantages and disadvantages of internal and external fertilization and internal and external early development.
- Describe structure and function of organs of the human reproductive system and basic stages of human reproduction and development.
- Define key terms for each topic covered in the course.

### REQUIRED Textbooks:

**LABORATORY MANUAL:** EXPLORING BIOLOGY IN THE LABORATORY by Murray P. Pendarvis and John L. Crawley, 11-th Edition. ISBN-13: 9780895827999. Morton Publishing

### Grading policy

The Final grade will be determined as follows:

<b>Laboratory</b>	
5 exams	70%
5 -10 lab reports/review questions	25%
Class participation/laboratories	5%
<b>Total</b>	<b>100%</b>

### Attendance and participation

Attendance is monitored from the first official day of classes. In the case of excessive absences or lateness, the instructor has the right to lower the grade, assign a failing grade, or assign additional written work or readings.

The maximum number of absences is limited to 15% of the number of scheduled class hours per semester, and a student absent more than the indicated 15% is deemed excessively absent.

Participation will be determined by how well a student is prepared for class, students' answers to questioned asked in class and by how timely a student is submitting laboratory assignments.

The City University of New York awards letter grades to denote the level of achievement for each course. The grading system is as follows:

Grade	Percentage	GPA Value
A	93 – 100%	4
A-	90 – 92%	3.7
B+	87 – 89%	3.3
B	83 – 86%	3
B-	80 – 82%	2.7
C+	77 – 79%	2.3
C	70 - 76%	2
D	60 - 69%	1
F	Below 60%	0

### Make-up exams

If you have missed an exam, but **have a valid excuse**, you have two weeks to take a make-up exam. All make-up exams will be given on out-of class time and by an appointment only.

### Extra credits

- Service learning. Service learning entails tutoring students in your section of BIO111. It is open to students who demonstrated strong knowledge of the course material only. Amount of points awarded to students participating in service learning will depend on the success of their tutees.

- Library workshops. Students are encouraged to attend library workshops *Plagiarism and How to Avoid It* and *Surf Smart: Using the Web for information and Research*. Attendance of a workshop will merit 2 extra point if take in the first month of classes, and 1 extra point if taken after December 1.

### Assignments

You will be assigned homework or a laboratory report after each class. You will complete it at home and bring it to your instructor at time of the next class.

### Conflict resolution

If you have any issues with the course, your classmates or your instructor, talk to your instructor first. Do not wait till the issue escalates to the size of a problem preventing you from successfully completing the course.

### Academic integrity: Plagiarism, Cheating, and Bribery

(Excerpt from the Hostos Community College Catalog)

Hostos Community College believes that developing student's abilities to think through issues and problems by themselves is central to the educational process. Since the Hostos College degree signifies that the student knows the material s/he has studied, and the practice of academic dishonesty results in grades or scores that do not reflect how much or how well the student has learned, understood, or mastered the material, the College will investigate any form of academic dishonesty brought to its attention. If the charge of academic dishonesty is proved, the College will impose sanctions. The three most common forms of academic dishonesty are cheating, plagiarism, and bribery.

In the collegiate setting, cheating is defined as the purposeful misrepresentation of another's work as one's own. Faculty and students alike are responsible for upholding the integrity of this institution by not participating either directly or indirectly in act of cheating and by discouraging others from doing so. Plagiarism is a form of cheating which occurs when persons, even if unintentionally, fail to acknowledge appropriately the sources for the ideas, language, concepts, inventions, etc. referred to in their own work. Thus, any attempt to claim another's intellectual or artistic work as one's own constitutes an act of plagiarism.

In the collegiate setting, bribery involves the offering, promising, or giving of items of value, such as money or gifts, to a person in a position of authority, such as a teacher, administrator, or staff member, so as to influence his/her judgment or conduct in favor of the student. The offering of sexual favors in exchange for a grade, test score, or other academic favor, shall be considered attempted bribery. The matter of sexual favors, either requested or offered, in exchange for a grade, test score or other academic favor, shall also be handled as per the Sexual Harassment procedures of the College.

If you are suspected of plagiarism or cheating or if you attempt to bribe or influence your professor, you will be immediately reported to the college's Academic Integrity Officer. You will be unable to drop the class. The penalties range from an F with a score of 0 for an assignment to Failure for the entire term to expulsion from The City University of New York.

**Plagiarism is a form of cheating, so if any plagiarized material is found in your assignment, you will get no credit for this assignment.**

#### **College attendance policy:**

(Excerpt from the Hostos Community College Catalog)

Students are expected to attend all class meeting in the courses for which they are registered. Classes begin at the times indicated in the official schedule of classes. Arrival in class after the scheduled starting time constitutes lateness.

The maximum number of absences is limited to 15% of the number of scheduled class hours per semester and a student absent more than the indicated 15% is deemed excessively absent. Attendance is monitored from the first official day of classes. In the case of excessive absences or lateness, the instructor has the right to lower the grade, assign a failing grade, or assign additional written work or readings.

Absences due to late registration, change of program, or extenuating circumstances will be considered on an individual basis by the instructor. Each department and program may specify in writing a different attendance policy. Instructors are required to keep an official record of student attendance and inform each class of the College's or department attendance policy.

#### **Students with disabilities:**

(Excerpt from the Hostos Community College Catalog)

The Americans with Disabilities Act prohibits discrimination based on disability and requires the College to be physically and programmatically accessible. Beyond the basic requirements of the ADA, Section 504 of the Rehabilitation Act and New York State and New York City statutes, the College has created an office that provides services intended to help each student with a disability maximize his or her potential for success. Based on an intake interview and documentation provided by a student, a variety of

accommodations may be provided to assist qualified students to attain their academic objectives. Intake and counseling are provided in English and Spanish.

For more information go to <http://www.hostos.cuny.edu/>

### NEED HELP?

**Hostos Academic Learning Center:** <http://www.hostos.cuny.edu/asc/>

**Mentoring program:** <http://www.hostos.cuny.edu/oa/mentoring.htm>

### Services for Students with Disabilities

Location: 120 E. 149th Street (Walton Avenue), Rm. D-101

Contact info: (718) 518-4454 (voice/TTY); e-mail: [sswd@hostos.cuny.edu](mailto:sswd@hostos.cuny.edu).

### Counseling Center:

Location: Carlos E. González Counseling Center 120 E. 149th St. Rm. D-102

Contact info: 718/518-4319 \; e-mail: [infocounseling@hostos.cuny.edu](mailto:infocounseling@hostos.cuny.edu)

### Class schedule

*Please keep in mind that this is a tentative schedule, which means that while the order of laboratory classes will not change, your instructor may change dates of exams/writing assignments/homework deadlines.*

W K	DATE	TOPIC	FOR TODAY	ASSIGNMENT
1	Lab 1	Introduction to the BIO110 lab Introduction to experimentation	Handout: <i>Biology laboratory rules</i> Ch. 3 –Measuring Student activities: 3.3 Measuring the length 3.4 Measuring mass	Answer review questions
2	Lab 2	Chemistry: Understanding the composition of living thing	Ch. 2 Student Activities: 2.1 Goldfish, pp.13-16	Answer review questions
3	Lab 3	Chemistry/Biological Molecules	Ch 5, Chemistry: Understanding the composition of Living Things. Overview, pp. 47-49. Ch. 5 Student Activities: 5.1 Carbon dioxide, pp. 50-51 5.3 Purple cabbage extract, p.52 5.2, Determining pH of common substances, p. 51 5.4 Antacids, p. 53	Answer review questions
4	Lab 4	Chemistry/Biological Molecules-2	Ch. 5, Overview of organic compounds p. 53-55. Ch. 5 Student Activities: 5.5, Benedicts test, p. 55-56. 5.6, Iodine test for starch, p. 57-58 5.7, Grease-spot. p. 59-60 5.9, Biuret's test for proteins, p. 61-63.	Answer review questions

5	Lab 5	Exam 1, Ch. 3 and 5 Microscope	Handout: The Microscope agreement document. Ch. 4, Microscopy: Using Tools of Biology. Overview p. 33-36. Ch. 4 Student Activities: 4.1, Using the Microscope, p. 36-38. 4.2, Orientation, p. 38 4.3, Illumination, p. 38-39 4.4, Distance and Diameter, p. 39 4.5, Focus and Depth, p. 39-40 4.7, Wet mount, p. 41-42	Answer review questions
6	Lab 6	The Cell Observation and comparison of prokaryotic, animal and plant cells	Ch. 6. The Structure and Function of Cells. Overview p. 67-68. Ch. 6 Student Activities: 6.3. 6.3 Observing protists, pp. 73-74 6.6 Observing Plant Cells, pp.76-78 6.7. Observing Animal cells. pp. 79-80	Answer review questions
7	Lab 7	Physical & Chemical Aspects of Life	Ch. 9. Cellular Transport Mechanism. Overview pp. 121-122. Ch. 9 Student Activities: 9.2 Membranes, p.123 9.3 Plant Tissue pp. 124-125 9.4 Animal Tissue p. 126	Answer review questions
8	Lab 8	Exam 2, Ch 4, 6, 9 DNA Structure DNA Replication	Ch. 16. Unraveling the Double Helix: Understanding DNA and genetic code. Overview pp. 215-217 Ch. 16 Student Activities: 6.1 DNA, p. 223	Answer review questions
9	Lab 9	Mitosis and Cell Cycle	Ch. 12 Understanding Cell Reproduction, Overview pp. 150-163 Ch. 12 Student Activities: 12.2 Observing Plant Mitosis Handout: <i>Understanding mitosis through modeling.</i> Video: Mitosis	Answer review Questions
10	Lab 10	Meiosis	Ch. 13. Ensuring Genetic Variations: Understanding Meiosis. Overview p. 171-175. Ch. 13 Student Activities: 13.1. Meiosis in Ascaris, pp. 175-176 13.2. Meiosis in Sperm Cells, p. 177 Handout: <i>Understanding meiosis through modeling.</i> Video: Meiosis	Answer review questions
11	Lab 11	Introduction to Mendelian Genetics: Genetic traits and Probability.	Ch. 15. It's All in the Genes. Overview p. 197 Ch.15 Student activities: 15.1 Understanding the heredity, p.198-199 15.5 Genetic Traits, p. 205-207	Answer review questions

12	Lab 12	Exam 3, Ch. 12, 13, 15 (excluding Blood typing) Blood typing	Ch. 15 Blood groups Overview, p. 208 Ch. 15 Student Activities: 15.6 Rh Factor, p. 209 Blood typing kit, Handout accompanying the blood typing kit. Developing pedigrees, p. 210 – optional p. 432	Answer review questions
13	Lab 13	Plant and Animal Tissues	Ch. 7. Histology: Understanding Plant and Animal Tissues. Overview pp. 90-91. Epithelial Tissues: pp. 92-93 Connective tissues: pp. 93-98 Muscle Tissue, pp. 98-102 Nervous Tissue, pp. 102 Charts Video	Answer exercise questions. Laboratory report
14	Lab 14	Fertilization and early development	Ch 14. The Developing organism: Understanding Embryo. Overview p. 183-186 Ch 14 Student Activities: 14.1 Starfish development, p. 186-187 14.2 Chicken Development, p. 188-191 Video	Answer exercise questions. Laboratory report
15	Lab 15	Final examination Ch. 15 (Blood typing), 26, 7, 14		