

This syllabus is provided as a general informational guide. Some of the information may vary depending on the specific course section and instructor. Different sections of the same course may require different textbooks. Verify the section specific textbook information in the CUNY's Academic Course Schedule Web Page. Modifications of the grading system presented here will be communicated by the instructors of the sections when they meet the class.

BOROUGH OF MANHATTAN COMMUNITY COLLEGE

The City University of New York
Department of Science

General Biology -Biology 110

Lecture hours : 3

Fall 2021

Class hours total : 5

Laboratory hours : 2

Credits : 4

Instructor Information:

Name: _____, **Office N** _____, _____ [@bmcc.cuny.edu](mailto:_____@bmcc.cuny.edu), **Phone** _____

Office hours: _____

Course Description

General Biology presents an overview of many important topics in the natural sciences today and provides relevant background material from the physical sciences. It traces life from its beginning (cells) to the development of multicellular organisms. It covers topics such as Evolution, the Cell, Energy relationships, Inheritance, Molecular Genetics, Biotechnology, and Systems. It includes a hands-on laboratory experience correlated with the lecture content.

BMCC Mask Mandate Policy for In-Person Classes

CUNY has put in place a temporary mask mandate policy that requires the wearing of masks indoors in all campus buildings. See: <https://www.cuny.edu/coronavirus/university-updates/clarity-new-mask/>

Face masks help prevent the spread of COVID-19. As it is possible to have or carry the coronavirus without having or showing symptoms, it is necessary for every person in our community to wear a mask even if you are fully vaccinated and/or have tested negative for COVID19, or think you are completely healthy. For appropriate/acceptable masks and guidelines on use, see CDC guidelines at: <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html>.

While the mask mandate is in effect, the following will apply to all in-person classes (including in-person classes associated with hybrid courses):

- In a classroom, if a fully vaccinated instructor is teaching a class and can maintain social distance from all others in the classroom, he/she may choose not to wear a mask (subject to any additional Department guidelines regarding the use of face shields or other layers of protection).
- Students who attempt to enter a classroom without wearing masks will be asked by the instructor to put on their masks before entering. Students who remove their masks during a class session will be asked by the instructor to put on their masks. Masks will be available for distribution for those who need one.

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- Students may remove their masks momentarily during class (to drink something quickly), in classrooms other than labs, but must replace their masks immediately after that. The consumption of food is not permitted in any classroom or lab.
- Students who are not fully vaccinated are also required to maintain social distancing between themselves and all others in a classroom.

Basic Skills MATH 051 ENG 088 ACR 094

Prerequisites None

Corequisites None

| Course Student Learning Outcomes | Measurements |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Students will be able to understand metric measurements related to length, volume, weight and temperature including units used to measure cells and their parts. | 1. Graded problems involving calculations using the metric system and quiz/ examination based on a laboratory exercise using appropriate tools/instruments to measure length, volume, weight and temperature; quiz/examination. |
| 2. Students will be able to understand and analyze osmotic relationships with regard to artificial and natural selectively permeable membranes. | 2. A graded assignment reporting and analyzing the experimental as well as hypothetical results of a laboratory experiment including graphing; quiz/ examination. |
| 3. Students will be able to understand the structure and functions of different kinds of cells. | 3. Graded lab exercise; quiz/ examination |
| 4. Students will be able to understand the basis and mechanisms of inheritance. | 4. Graded mitosis, meiosis and genetics problems; quiz/ examination. |

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Below are the college's general education learning outcomes, the outcomes that are checked in the left-hand column indicate goals that will be covered and assessed in this course. (Check at least one.)

| | General Education Learning Outcomes | Measurements (means of assessment for general education goals listed in first column) |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | Communication Skills- Students will be able to write, read, listen and speak critically and effectively. | |
| <input type="checkbox"/> | Quantitative Reasoning- Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems. | |
| X | Scientific Reasoning- Students will be able to apply the concepts and methods of the natural sciences. | Students will conduct hypothesis- driven laboratory experiments and report and analyze the results. |
| <input type="checkbox"/> | Social and Behavioral Sciences- Students will be able to apply the concepts and methods of the social sciences. | |
| <input type="checkbox"/> | Information & Technology Literacy- Students will be able to collect, evaluate and interpret information and effectively use information technologies. | |
| <input type="checkbox"/> | Values- Students will be able to make informed choices based on an understanding of personal values, human diversity, multicultural awareness and social responsibility. | |

Required Text

Launchpad only: Ebook and resources \$59.99, follow the link your instructor will give you in class or on blackboard.

or

Custom Loose leaf: Phelan *What is Life?* 4e + 12M LaunchPad Access Card (required)
ISBN 9781319232337, \$91.80 at the BMCC bookstore, order through website.

No lab manual required for labs taught online, FREE materials will be provided weekly on BlackBoard

Other

Resources _____

Use of Technology: Launchpad and Blackboard

Evaluation & Requirements of Students

1. Objective & essay examinations including a final examination.

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2. Various types of writing assignments and/or oral presentations.
3. Evaluation of laboratory performance through testing / laboratory reports / homework assignments/ practicums.

LECTURE SYLLABUS

| Week | Topic | Text section |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| 1,2,3 | NATURE OF SCIENCE AND CHARACTERISTICS OF LIFE <ul style="list-style-type: none"> - Scope/Organization of Life - Characteristics of Living things including: Organization, Homeostasis, Energy requirements, Growth, Sensitivity, Motility, Reproduction - Nature of Science/Scientific Method - Classification-Taxonomy - How Evolution Works - Origin of the Universe /History of Life on Earth | Ch. 0 (e-version on Launchpad only) Ch 1 Ch 0 Ch 0, Ch 10 Ch 12 |
| 4,5 | CHEMISTRY OF LIFE <ul style="list-style-type: none"> - Matter, Elements and Atomic Structure Chemical bonding, water, acids & bases - Molecules of Life-Carbohydrates, Lipids, Proteins, Nucleic Acids | Ch. 2 Ch 3 |
| 6, 7 | CELLS and ENERGY <ul style="list-style-type: none"> - Prokaryotic and Eukaryotic Cells - Eukaryotic Cells/ Structure & Function - Cell Membrane, Organelles - Photosynthesis & Cell Respiration - Cytoskeleton | Ch 4 and Ch 5 |
| 8 | CELL MEMBRANES & TRANSPORT <ul style="list-style-type: none"> - Membrane Transport | Ch 3 |
| 9, 10 | CELL DIVISION <ul style="list-style-type: none"> - DNA replication - Cell Cycle - Chromosomal Organization - Mitosis, Meiosis, Cytokinesis - Stem Cells and Cancer | Ch 8 |
| 11, 12 | GENES and INHERITANCE <ul style="list-style-type: none"> - Mendelian Genetics - Different types of Inheritance: Incomplete Dominance, Multiple Alleles HUMAN GENETICS <ul style="list-style-type: none"> - Pedigrees, Sex-linkage | Ch 9 |
| 13 | DNA an GENE EXPRESSION <ul style="list-style-type: none"> - What is the genetic code and how it works - Protein synthesis: transcription and translation | Ch.6 |

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| | | |
|----|---------------------------------------------------------------------------------------------------|------|
| | - Mutation - Gene Regulation | |
| 14 | BIOTECHNOLOGY -The potential for genetic manipulation to improve agriculture and health | Ch 7 |

LABORATORY ASSIGNMENTS, REQUIREMENTS & EXPECTATIONS

Laboratory Reports

The instructor will assign specific laboratory reports.

Guidelines for writing lab reports will be found in exercise 4 of the Laboratory Manual on page 38 and will be discussed by the individual instructor as well.

Diagrams comparing the stages of Mitosis and Meiosis for lab exercises 9 & 10 will be assigned by the individual instructor.

Selected problems for the metric and genetics labs will be assigned by the instructor.

Homework including graphs found at the end of all the laboratory exercises should be completed and will be collected by the instructor at his / her request.

A laboratory **Practicum** may be administered by the instructor (Optional).

The instructor may administer lab quizzes or may include the laboratory on lecture exams.

No more than 30% of the final grade in BIO 110 will be determined by the laboratory portion of the Course.

The lecture instructor will determine the exact % if he or she is different from the laboratory instructor.

There is no way of making up a missed Laboratory session.

Instructors are required to take attendance in the laboratory as well as in the lecture classes even if the classes follow one another on the same day.

The requirements set forth above are the **minimum** requirements for the laboratory portion of this course; individual instructors may add to these requirements.

| WEEK | LAB EXERCISE | DESCRIPTION |
|------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | The metric system | Various exercises aimed at teaching students to understand and use the metric system e.g. measuring volume, mass, length using standard lab equipment (LO#3) |

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| | | |
|----|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | Taxonomy | Understanding the diversity of life by looking at representative organisms from the different domains (LO#1) |
| 3 | Scientific method | Use of the scientific method to study <i>Daphnia</i> . Data collection and lab report (LO#1-5) |
| 4 | Properties of organic compounds in cells | Testing for biological compounds (carbohydrates, proteins, lipids, nucleic acids) found in cells using qualitative biological analyses. Data collection and lab report (LO#1-5) |
| 5 | The microscope and Cells | Understanding various cell types (animal, plant, bacteria) by examining living samples and pre-prepared slide. Data collected includes various measurements (size, area, volume) (LO#1, LO#3) |
| 6 | Diffusion and osmosis | Examining the effect of isotonic, hypertonic and hypotonic solutions on living cells. Data collection and lab report (LO#1-5) |
| 7 | Photosynthesis | Examining how plants create and store energy by the process of photosynthesis. Data collection and lab report (LO#1-5) |
| 8 | Cell division - mitosis | Examining the stages of cell division in plants and animals using charts and models (LO#1, LO#3) |
| 9 | Sexual reproduction in higher flowering plants and meiosis | Examining the process of meiosis and its outcomes in higher plants using models (LO#1, LO#3) |
| 10 | Genetics I | Looking at examples of Mendelian genetics and laws of inheritance using Punnett squares (LO#1) |
| 11 | Genetic II | Problem solving |
| 11 | Bacteria from our environment | Test the antibiotic properties of spices, herbs and common everyday products on bacteria from our environment (LO#2, LO#3, LO#5) |
| 14 | Ecology | Investigate ecosystem, trophic levels and food webs, construct a population growth curve. |
| 14 | Final presentation | Present a poster or give PowerPoint presentation on (pre-approved) ecological topic of your choice. |

Class Participation

Participation in the academic activity of each course is a significant component of the learning process and plays a major role in determining overall student academic achievement. Academic activities may include, but are not limited to, attending class, submitting assignments, engaging in in-class or online activities, taking exams, and/or participating in group work. Each instructor

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has the right to establish their own class participation policy, and it is each student's responsibility to be familiar with and follow the participation policies for each course.

BMCC is committed to the health and well-being of all students. It is common for everyone to seek assistance at some point in their life, and there are free and confidential services on campus that can help.

Single Stop www.bmcc.cuny.edu/singlestop, room S230, 212-220-8195. If you are having problems with food or housing insecurity, finances, health insurance or anything else that might get in the way of your studies at BMCC.

Counseling Center www.bmcc.cuny.edu/counseling, room S343, 212-220-8140. Counselors assist students in addressing psychological and adjustment issues (i.e., depression, anxiety, and relationships) and can help with stress, time management and more. Counselors are available for walk-in visits.

Office of Compliance and Diversity www.bmcc.cuny.edu/aac, room S701, 212-220-1236. BMCC is committed to promoting a diverse and inclusive learning environment free of unlawful discrimination/harassment, including sexual harassment, where all students are treated fairly. For information about BMCC's policies and resources, or to request additional assistance in this area, please visit or call the office, or email olevy@bmcc.cuny.edu, or twade@bmcc.cuny.edu. If you need immediate assistance, please contact BMCC Public safety at 212-220-8080.

Office of Accessibility www.bmcc.cuny.edu/accessibility, room N360 (accessible entrance: 77 Harrison Street), 212-220-8180. This office collaborates with students who have documented disabilities, to coordinate support services, reasonable accommodations, and programs that enable equal access to education and college life. To request an accommodation due to a documented disability, please visit or call the office.

BMCC Policy on Plagiarism and Academic Integrity Statement

Plagiarism is the presentation of someone else's ideas, words or artistic, scientific, or technical work as one's own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations, require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism. Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC's Web site, www.bmcc.cuny.edu. For further information on integrity and behavior, please consult the college bulletin (also available online).