

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_

Title of Course ___Genetics_____ **Class Hours** ___Tue and Thu: 5:00-7:45 PM_____

XXX ___BIO 240_____ **Laboratory Hours per Week** ___3_____

Semester ___Sprin g2019_____

Instructor Information (Phone#, Office#, email) ___x1307, N698k, nvanloon@bmcc.cuny.edu_____

Credits ___4_____

Course Description ___ A one-semester introduction to molecular and classical genetics _____

Basic Skills ___MAT056_____

Prerequisites ___BIO220_____

Corequisites ___CHE 202 or departmental approval_____

Course Student Learning Outcomes (Students will be able to...)	Measurements (means of assessment for student learning outcomes listed in first column)
1. Understand the basic concepts and rules of inheritance and express themselves knowledgeably on these concepts	1. classroom discussions, homework , exams, research paper
2. Correctly perform techniques and use equipment commonly found in molecular biology laboratories	2. practical quizzes, practical laboratory exams
3. Evaluate the accuracy and veracity of media statements relating to genetics	3. classroom discussions, homework, exams, research paper
4. Extract useful information about genetics from Internet sources, analyze and evaluate available information	4. homework, research paper
5.	5.

What makes this course a Writing Intensive Course?

This is a Writing Intensive course that fulfills the WI requirement for graduation. Writing intensive courses pay special attention to developing critical reading, writing, and analytic skills to prepare students for college-level coursework in general. Both informal and formal writing will be designed to maximize your understanding of the subject matter. Formal writing assignments, at least 10-12 pages total, account for a significant portion of your grade and will include opportunities for revision.

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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.	Essay questions on exams, research paper
<input type="checkbox"/>	Quantitative Reasoning- Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems.	Homework and exams in which students are required to use quantitative skills: Chi square test, binomial theorem
<input type="checkbox"/>	Scientific Reasoning- Students will be able to apply the concepts and methods of the natural sciences.	Research paper, homework, laboratory reports
<input type="checkbox"/>	Social and Behavioral Sciences- Students will be able to apply the concepts and methods of the social sciences.	
<input type="checkbox"/>	Arts & Humanities- Students will be able to develop knowledge and understanding of the arts and literature through critiques of works of art, music, theatre or literature.	
<input type="checkbox"/>	Information & Technology Literacy- Students will be able to collect, evaluate and interpret information and effectively use information technologies.	Assignments using the National Center for Biotechnology Information: Pubmed, Genbank
<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.	Discussion of social and ethical ramifications of technological advances in genetics: sex selection for embryos, gene therapy, right to know, right not to know, etc.

Required Text Genetics a Conceptual Approach 6th Ed 2017, by Benjamin Pierce

Other Resources Laboratory handouts on Blackboard

Use of Technology (If Applicable) Blackboard, Turnitn, Voicethread

Evaluation and Requirements of Students

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, come by the Single Stop Office for advice and assistance. Assistance is also available through the Office of Student Affairs, S350, 212-220-

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8130.

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.

College Attendance Policy

At BMCC, the maximum number of absences is limited to one more hour than the number of hours a class meets in one week. For example, you may be enrolled in a three-hour class. In that class, you would be allowed 4 hours of absence (not 4 days). In the case of excessive absences, the instructor has the option to lower the grade or assign an F or WU grade.

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).

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Bio 240 Lecture and Laboratory Schedule.

Week	Chapter	Lecture	Laboratory
1	1 19	History of genetics, types of genetics, ideas that led to modern genetics: Theory of evolution, cell theory, germplasm theory, natural vs artificial selection	Quick and Dirty DNA Isolation from Spinach. (handout) (Ppt. Gel Electrophoresis Ch 19: Viewing DNA Fragments)
2	10	DNA and RNA as carriers of genetic information, structure of DNA	Magnetic DNA models (handout) Micropipetting practice (handout)
3	11.1, 11.2,11.4 2.1, 2.2, 2.3	Chromosome structure levels, centromeres and telomeres Organelle DNA, endosymbiotic theory, evolutionary rates in nuclear, mitochondrial and chloroplast DNA Chromosome structure, mitosis and meiosis, meiosis in mammals and angiosperms	Meiosis Model Flower Dissection Pollen tube germination
4	17.1, 17.2 12	Effects of DNA modification and epigenetic modifications on gene expression and speciation DNA Replication Prokaryotes	Polytene Chromosome Preparation from <i>Sarcophaga</i> (handout) (Ppt. Polytene Chromosome Prep)
5	12	DNA Replication Eukaryotes, Telomerase, Recombination	Agarose Gel Electrophoresis of pre-cut Lambda DNA, Standard Curve Generation (handout) (Ppt. Standard Curve generation)
6	13	Transcription, RNA World Promoters, transcription initiation and transcription termination in prokaryotes	Restriction Digestion (Forensics Lab handout) Holliday Recombination Model (Ppt. Restriction Digestion, Recombinant DNA. Ch 19: Cutting and Joining DNA Fragments)
7	13 17.3	Assembly of transcription initiation apparatus in eukaryotes Transcription regulation, transcription factors, activators, coactivators	Restriction Digestion Part 2 Bacterial Transformation (handout) (Ppt. Bacterial Transformation.

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			Ch 19: Cloning Genes)
8	14	RNA processing, alternative splicing, gene editing,	Bacterial Transformation part 2 pGlo extension (handout)
Week	Chapter	Lecture	Laboratory
9	14	RNA Interference, microRNAs, small interfering RNAs, CRISPR	Polymerase Chain Reaction (PCR) (handout) (Ppt. Polymerase Chain Reaction Ch 19: Amplifying DNA Fragments with the PCR)
10	15	Genetic Code, Protein Structure Levels, tRNAs, wobble, initiation, elongation, termination	PCR part 2, plant <i>Brassica</i> seeds (handout)
11	15	mRNA surveillance, post-translational protein modification, RNA and Ribosomes in Protein Synthesis, antibiotics, mitochondrial protein synthesis	counts <i>Brassica</i> , Chi Square beans, Binomial Expansion (Ch 3: Binomial Expansion and Probability, The Chi-Square Goodness-of-Fit Test)
12	3	Mendelian Genetics Monohybrid, dihybrid cross, multiplication, addition rules, dominance, segregation, independent assortment	GFP Purification and Chromatography part 1 Genetic mapping
13	3	Mendelian Genetics part 2 Binomial expansion, Chi square rule	GFP Chromatography part 2
14	9	Bacterial and Viral Genetic Systems Transformation, conjugation, transduction, antibiotics and bacterial evolution Influenza, HIV	Practice: Chi Square and Binomial Expansion, Genetic Mapping
15		Final Exam	