



Genetics BIO 240 Course Syllabus

TITLE OF COURSE: Genetics BIO 240
Course Number: BIO 240 Prerequisites: BIO 115 or BIO 111, MAT 100
Credits: 4
Instructor: Phone:
Email:
Office: Office Hours

1. **COURSE DESCRIPTION:** This course is a combination of selected genetic topics for both lecture and lab. In this course students will study various genetic topics including mendelian genetics, chromosome mapping, the genetic code, DNA repair & mutations, genetics of cancer, DNA technology, and epigenetics. Students will also conduct various labs including polymerase chain reaction lab, southern blotting, northern blotting, and restriction enzyme analysis

2. COURSE OBJECTIVES:

Upon completion of this course, the following objectives will be achieved:

1. Explain the modification of Mendelian genetics, and how chromosome mutations result in variation in number and arrangement.
2. Analyze linkage and chromosome mapping in eukaryotes
3. Analyze genetic mapping in bacteria and bacteriophage
4. Describe DNA replication, recombination, repair and transposition
5. Describe the most common techniques in molecular genetics, DNA cloning, and DNA recombinant.
6. Explain the steps of DNA transcription and translation
7. Explain the mechanism of genetic in causing different kinds cancer
8. Evaluate the usage of genomics, bioinformatics and proteomics in identifying human genetic disorders
9. Assess ethical aspects of genetic engineering and biotechnology
10. Analyze population and evolutionary genetics
11. Experiment different DNA technology PCR, electrophoresis, and southern blotting

3. TEXTBOOK REQUIRED:

Peter J. Russell. (2003). Essential iGenetics. Pearson Education



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Thomas R. Mertens & Robert L.Hammersmith. (2007).Genetics Laboratory Investigations 13ed. Pearson Education

4. EVALUATION METHODS:

- 1. Two Lecture Exams 20%
2. Two Lab Exams 20%
3. Lab Reports 10%
4. Written paper assignment 10%
5. Midterm Exam 15%
6. Final Comprehensive Exam 25%

A (95-100), A- (90-94), B+ (86-89), B (80-85), B- (75-79)
C+ (71-74), C (65-70), D (60-64), F (LESS THAN 60)

Table with 3 columns: Week, LECTURE, LAB. Rows include Mendelian Genetics, Sex Determination and Sex Chromosomes, Linkage and Chromosome Mapping in Eukaryotes, Genetic Analysis and Mapping in Bacteria and Bacteriophages, DNA Replication and Recombination, The Genetic Code and Transcription, Midterm Exam, The Genetics of Cancer, and Recombinant DNA Technology.



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		Restriction endonuclease
10 th	Genomics, Bioinformatics, and Proteomics	Isolation of Proteins
11 th	Application of Ethics of Genetic Engineering and Biotechnology <i>Submission of Research Papers</i>	Polymerase Chain Reaction (PCR)
12 th	Population and Evolutionary Genetics	Polymerase Chain Reaction (PCR)
13 th	Presentation of Research Topics	DNA Fingerprinting
14 th	Review for the final exam	Review of Labs
15 th	Comprehensive Final Exam	

Attendance & Make Up Exams

Students are expected to follow attendance guidelines as presented in the syllabus provided by the instructor. However, in case of an emergency or illness, students are advised to notify their instructor or counselor immediately. The instructor will determine the validity of the absence. The exceptions to instructor discretion exist when members of armed forces are called for training or assignment or any case where students are legally required to be elsewhere. Pending the submission of appropriate documentation reasonable accommodations for make-up work shall be provided, and in accordance with guidelines included in the syllabus. Make up exams will be given only in extenuating circumstances. It is your responsibility to let me know that you missed an exam. All make up exams are more difficult than the original.

COURSE REQUIREMENTS

ATTENDANCE POLICY: Attendance, Punctuality and participation are required. Students that miss 20 minutes of class will be counted as absent. At the start of each meeting a quiz could take place for only five minutes if you late for any reason you receive zero for it. Students missing more than 3 classes will receive a Failing Final Grade

Incomplete:

An INCOMPLETE grade for the course is given under specific conditions when a student, because of serious and unexpected reasons, cannot complete the requirements of the course. For example, if a student did not attend the final



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because of illness his or her excuse must be verified by a physician. Other absences from other assigned activities must be made up at another appointed time. To arrange for an incomplete grade, the student must see the instructor before final exam.

Lab Format: Unless indicated otherwise, each laboratory exercise is set up for team of four-five students. Each student on the team is to participate in every aspect of the lab exercise. After each exercise, a formal lab report is handed in for grading. The lab reports are written (word processed) individually, not as a team, and handed in during the next lab session. You are required, by department policy, to follow all safety procedures. Each lab team is responsible for cleaning up their work area after every lab.

Library Component: Students are encouraged to use the library to complete their research paper. They may use database such as: Science @direct, EBSCO, and many others. The paper must follow the APA format and the student must select and extract a peer review research journal article, and write a two pages' review on that research article. You should use the HCCC library database and other resources

ACADEMIC INTEGRITY

Academic integrity is central to the pursuit of education. For students at HCCC, this means maintaining the highest ethical standards in completing their academic work. In doing so, students *earn* college credits by their honest efforts. When they are awarded a certificate or degree, they have attained a goal representing genuine achievement and can reflect with pride on their accomplishment. This is what gives college education its essential value.

Violations of the principle of academic integrity include:

- Cheating on exams.
- Reporting false research data or experimental results.



- Allowing other students to copy one's work to submit to instructors.
- Communicating the contents of an exam to other students who will be taking the same test.
- Submitting the same project in more than one course, without discussing this first with instructors.
- Submitting *plagiarized work*. *Plagiarism* is the use of another writer's words or ideas without properly crediting that person. This unacknowledged use may be from published books or articles, the Internet, or another student's work.

When students act dishonestly in meeting their course requirements, they lower the value of education for all students. Students who violate the college's policy on academic integrity are subject to failing grades on exams or projects, or for the entire course. In some cases, serious or repeated instances of academic integrity violations may warrant further disciplinary action.

DISABILITY SUPPORT SERVICES

Students with disabilities who believe that they might need accommodations in this class are encouraged to schedule an appointment with Disabilities Support Services at (201) 360-4157, as soon as possible to better ensure that such accommodations are implemented in a timely fashion. All disabilities must be documented by a qualified professional such as a Physician, Licensed Learning Disabilities Teacher Consultant (LDTC), Psychiatrist, Psychologist, Psychiatric Nurse, Licensed Social Worker or Licensed Professional Counselor, who is qualified to assess the disability that the student claims to have and make recommendations on accommodations for the student. All information provided to the Disability Support Services Program will be confidential between the program, professors involved with the student, and individual student.

"Mandatory Use of HCCC Email Address: Members of the HCCC community are required to check their official HCCC email address in order to stay current with College and course communications. All college business communication between faculty, students, and staff must be sent via an official HCCC email address. If an employee or student elects to forward or link his/her HCCC email to a separate and private account, that individual remains responsible for all material transmitted to that account. Employees of HCCC shall not be responsible for any material that remains undelivered, due to defects in the private non-HCCC accounts. Failure in the operations of private email accounts shall not be cause for excuse from communications between the



student and the employee. Students that encounter difficulty with HCCC email should view the FAQ's section on the Portal. "

USE OF ELECTRONIC COMMUNICATION DEVICES:

Cell phones and all other devices are not allowed during class or lab times. **All of them Telephone, iPod or computer**

Diversity, Equity, and Inclusion Statement

Hudson County Community College (HCCC) fosters a welcoming environment that celebrates and encourages culturally responsive curricula, respects diverse viewpoints, and values discussions without censure or hostility. Our classrooms are strengthened by embracing all student voices and identities. The President's Advisory Council on Diversity, Equity, and Inclusion (PACDEI) encourages students to review DEI resources and initiatives at the following link:

<https://myhudson.hccc.edu/teamsites/Pages/pacdei.aspx>

Statement on Camera Usage in Remote Learning Environments

As a college, we strive to be student-centered and therefore encourage faculty to consider a student's individual circumstances (need for privacy, technological problems, etc.) when requiring that they turn on cameras during class. There is no legal prohibition on faculty requiring cameras be turned on during classes or college policy prohibiting such requests. If students are unable to turn their cameras on, they should communicate the circumstances to the faculty member. On-campus spaces are also available to students as an alternative to home or off campus online and remote instruction. The on-campus spaces include: Gabert Library L219, L221, L222, L419, STEM Building S217, and North Hudson Campus N224, N303D. Within these rooms, students will have access to computers, web cameras, and headsets. If there are any issues with space capacity, there are several additional rooms that can be utilized.

Dr. Abdallah Mohammad Matari PhD
Professor & Coordinator of Biology STEM



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Chemical Hygiene Coordinator
STEM Bulding - S504
263 Academy Street
Jersey City, NJ, 07306
Tel: (201) 360-4296

RUBRIC FOR PRESENTATION

Student Name(s): _____ Date:

Title _____

<u>Evaluative Criteria</u>	<u>Point Value</u>	<u>Points Earned</u>
<u>Format</u> <ul style="list-style-type: none"> Review of the Gene 	10	
<u>Completed Phases</u> <ul style="list-style-type: none"> Provision of handout- listing/brief description of highlights Provision of information (e.g., handout 	10	
<u>Delivery</u> <ul style="list-style-type: none"> Projected voice Good eye contact Appropriate body language Is concise and to the point 	10	
<u>Content</u>		



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<ul style="list-style-type: none"> ○ Discusses the location of the gene ○ Discusses its role ○ Discusses condition when it is mutant ○ Is it familial or not ○ Identifies treatment <ul style="list-style-type: none"> ● Identifies contribution of health research on it 	50	
<p><u>Timeframe</u></p> <ul style="list-style-type: none"> ● Stays within allotted timeframe (5-10 min) 	10	
<p><u>Impression</u></p> <ul style="list-style-type: none"> ● Professional presentation 	10	
<p>TOTAL:</p>	100	

Laboratory Report

Title of Experiment
 Author's Name
 Course
 Instructor
 Date



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Introduction

- Provide background information.
- Describe any relevant observations.
- State hypotheses clearly

Materials and Methods

- List equipment or supplies needed.
- Provide step-by-step directions for conducting the experiment.

Results

- Present data using a drawing (figure), table, or graph.
- Analyze data.
- Summarize findings briefly.

Discussion and Conclusions

- Conclude whether data gathered support or do not support hypotheses.
- Include relevant information from other sources.
- Explain any uncontrolled variables or unexpected difficulties.



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- Make suggestion for further experimentation.
- Answer questions from the lab manual

Reference List

- Cite the source of any material used to support this report.