



Principles of Biology I Bio 115 Course Syllabus
Hudson County Community College

TITLE OF COURSE: Principles of Biology I

Course Number: BIO 115 **Prerequisites: ENG 101, MAT100 or MAT 114**

Credits: 4

Instructor:

Phone:

Email:

Office:

Office Hours

1. **COURSE DESCRIPTION:** Principles of Biology 1 is a lecture and lab course that address some fundamental concepts and applications of biology. In this course students will learn the chemical context of life and the structure and function of large molecules like DNA. Students will also learn the cell structure, function and how processes such as photosynthesis, metabolism and cell cycle take place inside the cell. This course will also give students a clear understanding of some molecular and genetic concepts such as Mendelian inheritance and transcription & translation inside a cell.

2. COURSE OBJECTIVES:

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

1. Differentiate the living from living, the eukaryotic vs prokaryotic cells. Define homeostats, ecosystem and the components of scientific methods.
2. Distinguish between atoms and molecules; elements and compound; protons, neutrons, electrons, and define compounds and acid/ base.
3. Differentiate between the molecules of life as carbohydrates, saturated and unsaturated fatty acids, proteins, nucleic acids and distinguish the different levels of structures and their diverse functions.
4. Describe the structure of cells as the fundamental unit of life, organelles structure and function, animal versus plant cells, the microscope application with the cell.
5. Recognize the cell membrane and its regulations of different mechanisms such as, osmosis, diffusion and active transport.
6. Differentiate metabolic process such as anabolic, catabolic reactions and recognize the roll of enzymes in those reaction and the different forms of energy used. Describe photosynthesis in plant cells.
7. Describe the cell cycle mechanisms mitosis, meiosis and their important for living cells and their regulations and important.
8. Recognize the concepts of Mendel inherited experiment. Define homozygous, heterozygous, genotype and phenotype, the chromosomal basis of inheritance. Discuss the ethical issues that surround the release of bioengineered organisms.
9. Recognize DNA/ RNA structure and describe the DNA replication mechanisms, transcription and translation from DNA-RNA-proteins and mutations.



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3. TEXTBOOK REQUIRED:

Reece, Jane B, Campbell, Neil A, Cain, Michael L. Campbell Biology 11th Edition. Pearson. ISBN-13: 9780134093413

Judith G Morgan & M. Eloise Carter. Investigating Biology- Laboratory Manual 9th Edition. Pearson. ISBN13: 9780134473468

4. EVALUATION METHODS:

- 1. Two Lecture Exams 20 points
- 2. Two Lab Exams 20 points
- 3. Lab Reports 10 points
- 4. Assignment 10 points
- 5. Midterm Exam 15 points
- 6. Final Comprehensive Exam 25points

A (940-1000), A- (900-939), B+ (870-899), B (840-869), B- (800-839)

C+ (770-799), C (700-769), D (600-699), F (LESS THAN 599)

Week	Lecture Topic	Lab Topic	L O
1st	Introduction to the course. Evolution, The Themes of Biology & Scientific Inquiry.	Lab Safety Orientation Scientific Investigation ASI: Scientific Method Assignments	1
2nd	The Chemical Context of Life Water and Life.	Microscopes& Acid base ASI: Chemical Bonds	2
3rd	Carbon and the Molecular Diversity of Life. The Structure and Function of Large Biological Molecules.	<i>Micropting activity</i> <i>Macromolecules</i> <i>handout</i> <i>ASI:Structure of</i> <i>Biological Molecules</i>	2
4th	A Tour of the Cell. Chapter 4	Cells organelles structure	<u>3</u>



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		ASI:Different cells	
5 th	Membrane Structure and Function. Chapter 7	Diffusion & Osmosis ASI:Plasma Membrane	3
6 th	Introduction to Metabolism.	Lab Exam I	4
7 th	Cellular Respiration Photosynthesis.	<i>Enzymes</i>	5
8 th	Midterm Exam		1-5
9 th	The Cell Cycle.	<i>Mitosis Lab</i> ASI: Cell Cycle	6
10 th	Meiosis and Sexual Life Cycles.	Meiosis lab ASI:Meiosis and genetic Variability	7
11 th	Mendel and the Gene Idea.	Mendelian Genetics Blood type	7
12 th	The Chromosomal and Molecular Basis of inheritance.	Gel Electrophoresis with dye. ASI: Sex Linked	8
13 th	The Molecular Basis of Inheritance	DNA extraction & Electrophoresis ASI: DNA replication	9
14 th	From Gene to Protein	Lab Exam II ASI: Steps of transcription	9
15 th	<u>Final Exam</u>		

- **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



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(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.

5. ATTENDANCE POLICY:

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. 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**

Make Up Exams

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, punctuality and participation are required. Students missing more than 2 classes may receive a failing 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 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



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time. To arrange for an incomplete grade, the student must see the instructor before final exam.

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



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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.

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

Reference List

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