



TITLE OF COURSE: Principles of Biology II

Course Number: BIO116

Prerequisites: BIO 115

Credits: 4

Instructor:

Phone:

Email:

Office:

Office Hours

1. **COURSE DESCRIPTION:** This course is a continuation of Principles of Biology I. Students will study the structure, function, and behavior of organisms, and they will appreciate the unity and diversity of life. Topics include the principles of evolution, Viruses and DNA biotechnology, Diversity of Bacteria, plants and Protists. Students will compare the Immune, Circulatory, Nervous and Hormonal systems between human and other species. Laboratory exercises will encourage students to practice science throughout hands on experiments

2. COURSE OBJECTIVES:

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

1. Describe DNA sequencing, cloning, stem cell research and perform experiments such DNA extraction, PCR, Western/Southern Blotting.
2. Explain the concepts of evolution from Darwinian, evolution of population, the origin of species the history of life on earth and Hardy-Weinberg theory.
3. Differentiate between micro and macro evolutions, Phylogeny and Taxonomy process between kingdoms and domains.
4. Differentiate the structure of virus as enveloped versus non enveloped, viroid's, Prions & Compare virus replication as lytic or lysogenic and virus mutations.
5. Differentiate between bacteria, archaea and protists, fungi structures, metabolic process and diversity
6. Compare between, conjugation, transformation and transduction in genetics recombination and mutations of bacteria and archaea and their effect on other species.
7. Compare and contrast Plants structures and tissues Ground, vascular, angiosperm diversity.
8. Differentiate and describe systems structure and function between different species such s circulation, exchange, immune, endocrine and nervous systems.
9. Describe population ecology, community and ecosystems.



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%
- 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)**

Weeks	Lecture	Labs
Week 1	Review from BIO 115 DNA & RNA	Laboratory Safety Orientation & Safety Rules: Discuss the theory of Labs performed in BIO 115
Week 2	Biotechnology. Ch 20	Restriction Enzyme Lab Lab Topic 10.1 Starting from 2. Prepare the digestions (p.253-258)
Week 3	A Darwinian View of Life. Ch 22	Continuation from Lab Topic 10.1 (p.259) Lab Topic 10.2: Practice Problem for Mapping DNA
Week 4	Origin of Species. Ch 23 History of Life. Ch 25	Lab Topic 11: Population Genetics: The Hardy-Weinberg Equilibrium
Week 5	Phylogeny. Ch 26	Lab Practical Exam I
Week 6	Viruses. Ch 19	Video on Viruses
Week 7	Bacteria and Archaea. Ch ch 27	Lab Topic 12: Bacteriology (12.2 and 12.3)



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Week 8	Protist Chapter.ch 28 Plant Diversity ch 29,30	Lab Topic 13: Protists
Week 9	Fungi. Ch 31	Midterm Exam
Week 10	Vascular Plant Structure, Growth, and Developmentch 35	Lab Topic 14: Plant Diversity I: Bryophytes (Nonvascular Plants) and Seedless Vascular Plants
Week 11	Circulation and Gas Exchange. Ch42	Lab Topic 23: Vertebrate Anatomy II: The Circulatory and Respiratory Systems Sheep Heart Dissection Models
Week 12	Immunity. ch 43	Lab Topic 18: Animal Diversity I: Porifera, Cnidaria, Platyhelminthes, Mollusca, and Annelida
Week 13	Nervous System. Ch 49	Lab Topic 24.3 Nervous Tissue, the Spinal Cord and Reflex Arc, the Sheep Brain and the Vertebrate Eye
Week 14	Regulations and Hormones. Ch 45 Population Ecology. Ch 53	Lab Practical Exam II
Week 15	Final Exam	

COURSE REQUIREMENTS

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.



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

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.

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 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.



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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



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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.



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Laboratory Report



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Title of Experiment
Author's Name
Course
Instructor
Date

Introduction

- Provide background information.
- Describe any relevant observations.



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- 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.