



Course Title: Ecology

Course Number: BIO 208

Credit: 4

Prerequisites: BIO100 or Bio 115, MAT114

Instructor:

Phone:

Email:

Office:

Office Hours:

COURSE DESCRIPTION:

In this course, students will understand the mechanisms governing the structure and function of ecological systems, particularly the relationship between organisms and the environment. Students will investigate key environment issues such as; global climate change, acid deposition, loss of biodiversity and genetically modified food

STUDENT'S OUTCOMES/OBJECTIVES

Upon completion of this course, student will be able to:

1. Define ecology and to test ecological theories
2. classify the different elements of life on earth, including water, temperature relations in ecosystems, macroclimate and microclimate.
3. discuss how climate influences vegetation, color of the ground, and organisms, the influence of temperature on plants, and microbial activity.
4. Explain water relations in ecosystems, the importance of water and its availability, water movement between soil and plants, relationship between different source of energy and nutrient
5. identify the principles of mate choice and sexual selection, the principles of cooperative breeders, analyze population genetics and natural selection, the Hardy-Weinberg model to identify evolutionary, discuss the evolution by natural selection.
6. explain how the physical environment limits the geographic distribution of species, met populations, population density, population dynamic, patterns of survival in a population, and correlation between age distribution and population history.
7. differentiate between geometric and exponential population growth, logistic population growth, and classify life history on earth, and how organism compete within an ecosystem, define niches, how competition influences niches of species.
8. describe complex interaction within a population, how exploitation and abundance occurs within an ecosystem, the dynamic relationship between prey and predator.
9. Explain how mutualism facilitates interactions of different species, plant and coral mutualism, why mutualism evolves when the benefits exceed the costs.



- 10. compare the factors that influence species abundance, explain why species diversity is higher in complex environment, and how species interaction determines community structure, feeding relationship in a community.
- 11. examine patterns of terrestrial primary production, aquatic primary production, and trophic levels, the nitrogen and carbon cycle within the environment, the rate of decomposition. plants and animals can modify nutrient cycling.
- 12. explain how community changes influences species diversity and composition, how ecosystems change during succession, and the principles of community stability

Required Text Book:

TEXT: Manuel C. Molles Jr. Ecology: Concepts and Applications. McGraw Hill 6th Edition ISBN-13: 978-0073532493

LAB MANUAL: Vodopich S. Darrell: Ecology Laboratory Manual, McGraw Hill, ISBN: 978-0-07-338318-7

Required Supplemental Material/Information: Simbio Virtual Labs Software (For lab experiments)

EVALUATION CRITERIA AND METHODS:

- Two exams 20 points
- Two Practical exam 20 points
- Final exam comprehensive 30 points
- Midterm 20 points
- Laboratory reports/assignments 10 points
- **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)**

Course Outline:

Week #	Lecture Topic	Lab Topic
1	Overview of Ecology	Lab Safety Rules Scientific Investigation
2	Life on Earth	SimBio Virtual Lab “The Barnacle Zone”.
3	Life in Water	SimBio Virtual Lab “Nutrient Pollution”.



4	Population Genetics and Natural Selection	SimBio Virtual Lab "Darwinian Snails". (software)
5	Temperature relations in ecosystem	5 written assignments: Climate Influence on Organisms or Temperature and Animal Performance
6	Water, Energy and Nutrient Relations in Ecosystems	SimBio Virtual Lab "Osmosis"
7	Social Relations	SimBio Virtual Lab "Who Rules the Rock".
8	Population distribution, abundance and dynamics MIDTERM	Lab Exam I
9	Population Growth and History of Life on Earth	SimBio Virtual Lab "Rabbits and Their Habitats"
10	Mutualism	soil testing and identify organism that can live in the different habitats.
11	Species abundance and diversity	Intermediate Disturbance Hypothesis
12	Species Interactions and Community Structure	Keystone Predators".
13	Primary Production & Energy Flow	"Growing Phytoplankton"
14	Nutrient Cycling, Retention, Succession and Stability	Lab Exam II
15	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, punctuality and participation are required. Students missing more than 2 classes may receive a failing grade. Cell phones should be turned off in the classroom.

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

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. 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.

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Laboratory Report

Title of Experiment
Author's Name
Course
Instructor
Date



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.