Course Syllabus

TITLE OF COURSE: Cell Biology
Course Number: **BIO 270** **Prerequisites:** BIO 115
Credits: 4
Instructor: **Phone:**
Email:
Office: **Office Hours**

1. **COURSE DESCRIPTION:** This course provides students with detailed information about the cell structure and physiology. Students learn the dynamic role of the plasma membrane. Students learn the various functions of the cytoskeleton in the cell. Notions of gene expression and regulation, cell trafficking, reproduction, metabolism, cell signaling, and signal transduction are explained as well. In the lab, students learn about tissue homogenization, protein estimation, western blot, RNA extraction, and microscopy techniques.

2. **COURSE OBJECTIVES:**

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

1. Infer the physiology of the cell organelles based on the understanding of their ultrastructure.
2. Analyze the steps of DNA replication, transcription, translation, and cell cycle.
3. Differentiate between metabolic processes and cell signaling pathways.
4. Demonstrate an understanding of cell-cell relations.
5. Analyze the relationship between the structure and the function of the cell membranes and organelles.
6. Apply concepts related to the cell anatomy and physiology during the performance of membrane transport, metabolism, RNA extraction, and western blot lab techniques.

3. **TEXTBOOK REQUIRED:**
Becker's World of the Cell, 10th Edition Jeff Hardin, University of Wisconsin, Madison**,** James P. Lodolce. Pearson.
ISBN-13: 9780134839707

4. **EVALUATION METHODS:**

3 Short-term exams:	300 points
2 Practical exams:	150
1 Research paper:	150
Lab reports:	150
Final exam:	250

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)

Session	Lecture Topic	Lab Topic
1	Ch#1. A Preview of Cell Biology	Laboratory Safety Lab 1: Light Microscope Lab 2: Cell Culture Basic
2	C#2. The Chemistry of the Cell	Lab 3: Advanced in Acids and Bases
3	Ch 3. Cells and Orgnelles	Lab 4: Enzyme Kinetics Lab 5: Pipetting: Selecting and using Micropipettes
4	Ch 4. Flow of Energy in the cell Ch 6. Enzymes The Catalysts of Life **Exam 1**	Lab 6: Protein Synthesis
5	Ch 8. Transport Across Membrane Ch 12. The Endomembrane System	Lab 7: Animal Genetics
6	15. Beyond the Cell: Cell Adhesions, Cell Junctions, and Extracellular Structures	Lab 8: Polymerase Chain Reaction
7	Ch16. DNA, Chromosomes, and the Nucleus	**Practical Exam 1**
8	Ch17. DNA Replication, Repair, and Recombination **Exam 2**	Lab 9: Gene Expression & Gene Regulation
9	Ch18 : Gene Expression Transcription	Lab 7: Osmosis
10	Ch19. Gene expression Protein synthesis Research Paper Discussion	Lab 8: Cell Membrane and Transport
11	Ch 21 . Techniques for cell biology	Lab 9: Cellular Respiration
12	23. Signal Transduction Mechanisms II: Messengers and Receptors	Lab 10: Signal Transduction
13	24. The Cell Cycle and Mitosis	Lab 11: Mitosis

14	26. Cancer Cells Research Paper Due	**Practical Exam 2**
15	Final Exam	

- **Lab Format:** Unless indicated otherwise or simulated labs are used. 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.

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 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.

DISABILTY 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.