SCHOOL OF STEM SYLLABUS

TERM:

INSTRUCTOR:

COURSE CODE: BIO-270

OFFICE HOURS:

COURSE TITLE: Cell Biology

OFFICE LOCATION:

DAY(S) AND TIME(S):

EMAIL:

LOCATION:

PHONE:

COURSE PREREQUISITE: BIO-115

CREDITS: 4

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.

STUDENT LEARNING OUTCOMES:
Upon completion of this course students will be able to:

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.

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

GRADING POLICY:

3 Short-Term Exams	300 points
2 Practical Exams	150 points
1 Research Paper	150 points
Lab Reports	150 points
Final Exam	250 points

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

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.

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

SAMPLE COURSE SCHEDULE:

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	

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https://www.hccc.edu/administration/academic-affairs/syllabus-addendum.html


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