Course Title: BIO 181 Unity Of Life I: Life Of The Cell
Term: Summer 2023
Instructor: TBA
Course Credit: 3
Mode of Instruction: Online

Course Description:

Emphasizing the unifying molecular and cellular principles of all life on earth, this course is the first part of a two-semester course sequence that covers an introduction to the general biological concepts. Topics will involve structure and function of the cell, its metabolism and DNA, molecular genetics, mechanisms of evolution, biodiversity of plants and animals, history of life and so on.

Course Prerequisites:

None

Learning Outcomes:

By the end of the course, the student should be able to:

A. Gain insights into the basic elements and concepts of biology.

B. Recount a basic understanding of the molecular and cellular basis of life.

C. Explain the patterns of inheritance and DNA, and the distinct differences between plants and animals.

D. Design and conduct biological experiments, and analyze and interpret biological data.

E. Demonstrate basic problem-solving processes, including observation, measurement, prediction, classifying and use of space and time relationships in life sciences.

Course Material:

Bruce Alberts, Dennis Bray, Karen Hopkin, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, Peter Walter, ***Essential Cell Biology***. Garland Science: New York, 4th Edition 2014.

Evaluation:

- 2 Quizzes [20%]
- 2 Laboratory assignments [20%]
- Term Paper [10%]
- Mid-term Exam [20%]
- Final Exam [30%]

Description of the Evaluation tasks:

Assignment/ Essay/ ... : During the term, students will be required to finish several evaluation tasks within due date. All the tasks are linked with specific course topics/outcomes and will adequately assess students' competence and learning outcomes. Students are encouraged to meet with instructor about these tasks at any point.

Mid-term/ Final Exams/ Quiz/... : There may be periodic quizzes given at the beginning of lecture sessions; the feedback from these quizzes will monitor the progress of the learners and help to set learning priorities. There will be mid-term exam/ final exam for the course. They are the basic criteria for the evaluation of students' learning outcomes and final grade.

Grading Policy:

Students are supposed to finish each online lecture. Prior to each class, students should finish the required readings. During the class time, students are encouraged to make use of all relevant online course resources and communicate with the instructor. Students' grades are accumulated based on the cumulative evaluations.

Students' letter grade will be assigned according to the following scale:

A+ 90-100	A 85-89	A- 80-84
B+ 77-79	B 73-76	B- 70-72
C+ 67-69	C 63-66	C- 60-62
D+ 57-59	D 53-56	D- 50-52
F < 50		

Academic Integrity:

Students must strictly adhere to the university's academic integrity rule; and all essays, exams and any other form of academic assignments must adhere to these rules. Any form of plagiarism, cheating, or misappropriation of materials will be considered a violation of academic integrity and will be punishable by the university.

Withdrawal from the Course(s):

Students will be able to apply for a transfer or withdrawal within 3 days of the starting date of the course. If a withdrawal is applied for within 3 working days, the tuition fee will be fully refunded. After 3 days, the tuition fee will not be refunded. If a withdrawal is applied for in the first two weeks, it will be recorded as W (Withdraw) on the course transcript. After this initial two-week period, the class will be recorded as F (Fail).

Tentative Schedule:

1	Course Introduction
2	Life and the Scientific Theory
3	Cellular Structure
4	Cellular Function
5	The Cellular Basis of Reproduction and Inheritance **Quiz 1**

6	Molecules of Life
7	Basic Molecular Genetic Mechanisms
8	Molecular Genetic Techniques **Laboratory assignment 1**
9	Genes, Genomics and Chromosomes
10	Transcriptional Control of Gene Expression
11	Cell Membranes and Cell Surface
12	**Midterm Test**
13	Cell Signaling and Communication
14	Cell Cycle & Mitosis
15	DNA and Its Role in Heredity
16	DNA to Protein: Gene Expression **Quiz 2**
17	Gene Mutation & Molecular Medicine
18	Mechanisms of Evolution
19	Evolution of Genes and Genomes
20	Biodiversity of Plants **Laboratory assignment 2**
21	Biodiversity of Invertebrate Animals
22	Biodiversity of Vertebrate Animals
23	History of Life on Earth
24	History of Life on Earth (Cont.) **Term Paper**
25	**Final Exam**