LEAD CITY UNIVERSITY, IBADAN
Faculty of Sciences
Department of Biochemistry

COURSE PARTICULARS

Course code: Cell and Molecular Biology
Course title: BCH 212
No. of Units: 2
Status: Compulsory

LECTURER DETAILS

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Area of Specialization: Immunology,Toxicology,Cancer Research

COURSE DESCRIPTION

Cell and molecular biology is the branch of biology that deals with the molecular basis of biological activities within the cell. It is concerned with understanding the interactions between macromolecules within the cell.

COURSE OBJECTIVES

- To have a basic understanding of the cell.
- To have a knowledge of the differences between prokaryotic and eukaryotic cells
- To understand the organization and functions of cell organelles

- To have a basic understanding of the transport systems across the cell membrane
- To have a basic knowledge of the macromolecules within the cell.

ASSESMENT

Class Attendance	5marks
Test(s) and Assignments	25marks
Final Examination	70marks

LECTURE PLAN

1st week	History and present trends in biology
2nd week	Cell theory
3rd week	Structural organization of prokaryotic cells
4th week	Structural organization of eukaryotic cells
5th week	Chemical nature and structure of cell membrane
6th week	Movement of solutes through the cell membrane
7thweek	The molecular basis of cell structure- carbohydrates, lipids, proteins and nucleic acids
8th week	Biological phenomena/ Bioelectric phenomena
9th week	Cell biology of movement
10thweek	Cell differentiation
11th week	Mitosis
12th week	Meiosis
13th week	Revision

READING LIST

1. Lehninger Principles of Biochemistry by David. L.Nelson and Michael M. Cox (4th edition)
2. Garett and Grishan Biochemistry, 2nd edition.
3. Principles of Biochemistry by Horton, Moran, Scrimgeour, Perry and Rawn.
4. Biological Science (Third edition) by D.J. Taylor, N.P.O Green, G.W Stout and R. Soper

TUTORIAL QUESTIONS

Section I

1. With the aid of suitable diagrams, compare and contrast the nature of Eukaryote and Prokaryotes cells.

2. Discuss the structure and function of a named eukaryotes cells.

3. Discuss the current tools in the study of cell biology.
4. Write short notes on the following
   a. Mitochondria
   b. I-cell disease
   c. Nucleus
   d. Cell membranes
   e. Lysosomes

5. Give an account of current trends in biology

Section II

1a. Write concisely on the composition of cell surface membrane
b. Of what importance is the cell surface membrane?
c. How does the composition of cell membrane affect the passage of substances through it?
2a. What is active transport?
b. What are the major differences between active transport and diffusion?
3a. What is Na^+-K^+ pump?
b. Explain why bacteria, fungi and plants do not require the Na^+-K^+ pump
c. Give the functions of the Na^+-K^+ pump
4. What do you understand by bulk transport?
b. Of what importance is bulk transport in cells?
5a. What is bioelectric phenomenon?
b. Explain the term electroporation.
c. Of what importance is electroporation of tissues?

Section III

1. Explain the following
a. Apoptosis
b. Cell differentiation
c. Morphogenesis
d. Cytokinesis

2a. What are stem cells?

b. Differentiate between haploid and diploid cells; somatic cells and germ cells

c. Explain the cell cycle

3a. Discuss what happens within the nucleus during mitosis

b. Write on the significance of mitosis

4a. Explain the stages in Meiosis

b. Discuss the significance of Meiosis