



**Course
Outline
Form**

**ODD SEMESTER
2019**

Dear Student: Course outlines are intended to provide students with an overall plan for a course to enable them to function efficiently and effectively in the course.

*Academic Programs
BSc Biotechnology
EMEA College
Kondotty*

Course Outline : Cell Biology (2018-2019)

Name of the Stream	Science
Name of the Programme	BSc Biotechnology
Name of the Course	Cell Biology
Nature of the Course	Core Course
Semester	First
Lecturer(s)	Shilly Das A and Ruba badarudheen
Name of the Coordinator	
Year	2018-2019
No of Credits	3
No of Contact Hours	3
Course Description	This course deals with the biology of cells of higher organisms: The structure, function, and biosynthesis of cellular membranes and organelles; cell growth and oncogenic transformation; transport, receptors, and cell signaling; the cytoskeleton, the extracellular matrix, and cell movements; chromatin structure and protein synthesis
Course Objectives	1. To understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles 2. To understand how these cellular components are used to generate and utilize energy in cells 3. To understand the cellular components underlying mitotic cell division. 4. To apply their knowledge of cell biology to selected examples of changes or losses in cell function. These can include responses to environmental or physiological changes, or alterations of cell function brought about by mutation
Course Outcome	Students were able to demonstrate an understand the characteristics of living organisms including their chemical composition, cellular structure, and cellular metabolism.
Assessment Method	Assignments Homeworks Class Tests Unit Tests Seminars Lab Experiments
Teaching Methods Used	Cooperative Learning
Textbook	Molecular cell biology – Lodish et al 3. Cell and Molecular Biology: Concepts and Experiments - Gerald Karp and Nancy L Pruitt
References	1. Molecular biology of cell – Alberts B et al 2. Molecular cell biology – Lodish et al 3. Cell and Molecular Biology: Concepts and Experiments - Gerald Karp and Nancy L Pruitt 4. Reproduction in eukaryotic cells – D M Prescott 5. Developmental biology – S F Gilbert, Sinauer Associates 6. Cell in development and inheritance – E B Wilson 7. The coiled spring – Ethan Bier 8. Fertilisation – F T Longo, Champan and Hall 9. Molecular biology of steroid and nuclear hormone receptors – L P Freedman

Internet Resources

Internal Exam Pattern

Items	Marks/20	Marks/15
Assignment	4	3
Test Paper(s)/Viva voce	8	6
Seminar/Presentation	4	3
Class Room Participation based on Attendance	4	3
Total	20	15

External Exam Pattern

Question Type	No of Question	Marks/Question	Total Marks
Short Questions(2-3 Sentences)	15	2	Ceiling 25
Paragraph / Problem Type	8	5	Ceiling 35
Essay Type	2 out of 4	10	20
Total			80
Time			2.5 hrs

Graduate Attributes

Name of the Course: Cell Biology

Knowledge

Academic and Intellectual Skills

Self Learning

Collaborative Learning

Professional Skills

Research Skills

Personal Skills

Application Skills

Attitude and Values

Social Responsibility

Ethical Commitment

Course Schedule

Introduction to cell biology: Milestones in cell biology, Cell theory,

Week 1

Properties of cell Classification of cell, Structural organization of prokaryotic and eukaryotic cell.	Week 2
Comparison of microbial, plant and animal cells. Origin and evolution of cells. Assignment	Week 3
Theory of microscopy and types of microscopes. unit test	Week 4
Structure and function of plasma membrane.	Week 5
Transport across membranes: active, passive, diffusion and osmosis.	Week 6
Interaction between cell and its environment- cell adhesions, cell junction,	Week 7
extracellular matrix and cell wall. unit test	Week 8
Cell compartments endoplasmic reticulum, Golgi complex, lysosomes	Week 9
vesicular trafficking- endocytosis and exocytosis, peroxisomes, glyoxysomes and vacuoles. first internal examination	Week 10
Ribosome and protein synthesis	Week 11
.Mitochondrion-aerobic and anaerobic respiration,	Week 12
chloroplast and photosynthesis. second internal examination	Week 13
Structure and function of nucleus, nucleolus, chromosomes and types of chromatin.	Week 14
. Cytoskeleton- microfilaments, intermediate filaments, microtubule.Cilia and flagella.	Week 15
Cell division in prokaryotes and eukaryotes. Cell cycle, phases of cell cycle, mitosis and meiosis. Apoptosis and cell death.	Week 16
A brief overview of cell signaling,	Week 17
stem cells and cancer. Model examination	Week 18

Contact Details

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