



Gyanmanjari
Innovative University

Course Syllabus
Gyanmanjari Science Colleges
Semester-1 (M.Sc.)

Subject: Cell Biology- MSCMB11501

Type of course: Major

Prerequisite: To teach students about the basic principles of biology, such as structure and function of cells, tissues, and organs.

Rationale: To communicate new findings about structure and function, and dynamics of cells. cell biology is a vast and complex field, and there is always more to learn about how cells work.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P		C	Theory Marks		Practical Marks		
			ESE		MSE	V	P	ALA	
4	0	0	4	60	30	10	00	50	150

Legends: CI-Classroom Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.



Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1	Presentation Faculty will assign topics and students will prepare presentations (Slideshow/video) and upload them to Moodle.	10
2	MCQ Test Faculty will provide the students a set of MCQs according to the learning objective of the course and students will answer it individually or by working together in a small group.	10
3	Brain writing Faculty will provide a picture, text passage or video clip, student observe, analyze and write about it.	10
4	Poster Making: Students need to prepare a poster in group of two on the theme assigned by faculty and upload on Moodle	10
5	Quiz Faculty will conduct quiz sessions in the classroom per unit of their respective subject.	10
Total		50



Course Content:

Unit No	Course content	Hrs	% Weightage
1	Chapter:1-Cell Theory <ul style="list-style-type: none"> • General Cellular Status of prokaryotic and eukaryotic cells. • Cell wall and cell membrane and its function. • Cell cycle: Cell division and its types (somatic and reduction division). • Regulation and control of cell cycle. • Apoptosis. 	15	25
2	Chapter:2-Cell structure and Organization <ul style="list-style-type: none"> • Ultrastructure of plasma membrane, microbial and plant cell walls, nucleus and nucleolus, pore complex and nuclear envelope. • Cell structure and Organization: Ultra structure of Chromosomes, chromosomal models and special types of chromosomes. 	15	25
3	Chapter:3-Cell structure and Organization: <ul style="list-style-type: none"> • Ultrastructure of Golgi apparatus. • Ultrastructure of Endoplasmic Reticulum. • Mitochondria: Membrane organization, biogenesis and role in cellular energy. • Chloroplasts: Ultrastructure, biogenesis, photosynthetic units and reaction centers. 	15	25
4	Chapter:4-Cytoskeleton <ul style="list-style-type: none"> • Organization and function of microtubules, microfilaments and Intermediate filaments. • Ultrastructure and functions of lysosomes, peroxisomes and glyoxysomes. • Vacuoles and their role in cell structure and function. 	15	25



Suggested Specification table with Marks (Theory):60

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	20%	40%	30%	10%	-	-

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcome:

After learning the course the students should be able to:	
CO1	Gain Knowledge on Cellular analysis of prokaryotic and eukaryotic cells.
CO2	Learn about organelles present in plant, animal and microbial cells.
CO3	Learn about specialties of different types of cells.
CO4	Understand about Cytoskeleton including ultra structure and functional analysis.

Instructional Method:

The course delivery method will depend upon the requirement of content and the needs of students. The teacher, in addition to conventional teaching methods by black board, may also use any tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in the laboratory.

Reference Books:

- 1) The Cell – A molecular approach – 2007.
- 2) Cell Physiology – A. C. Giese
- 3) Essential Techniques in Cell Biology – Bhatnagar, Murthy, Chinoy, V.C. Shah.
- 4) The Cell – Swanson and Webster

