Integrated Bachelor and Master Programmes in Biomedical Science
IBMP(Biomedical Science) Semester (I)

Paper Code	IS01CBMC52	Periods per week	04
Title of the paper	Cell Biology	Exam Duration	3Hrs
Total Credit of the Paper	04	Total Marks	100

Course Objectives:	1.To enable the students to understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles 2.To expose the students to how these cellular components are used to generate and utilize energy in cells 3.To make the students comprehend the cellular components underlying mitoticcell division 4.To prepare the students 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 Description		
Unit	Description	Weightage*
1.	Cell: Introduction, cell theory, types of cells - Prokaryotic cell and eukaryotic cell structure, differencesbetween plant and animal cell. Structure, composition and functions of cell membrane, bacterial cell wall and plant cell wall. Cell organelles: Structure and functions of nucleus, mitochondria, chloroplast, endoplasmic reticulum, Golgi bodies, ribosomes, lysosomes, peroxisomes and cytoskeleton .	25%
2.	Chromosome organization: Structure and types of chromatin: euchromatin and heterochromatin, nucleosomal structure and packaging of DNA; structure, compositionand organization of chromosomes, special types of chromosome.	25%
3.	Extracellular matrix and cell interactions: ECM:- Collagen, Elastin, Fibronectin, Laminins, Cell – ECM interactions:- Integrins, Focal adhesions, Hemidesmosomes. Cell – cell interactions:- Cadherins, IgSF, Selectins, Intracellular junctions: Gap junctions, tight junctions, adherens junction, desmosomes.	25%
4.	Introduction to cell signalling; various pathways of cell signalling and their significance. Cell cycle in eukaryotes and its control; Apoptosis	25%

	and necrosis; cell death and renewal and their role in growth and development.	

* Units will have the same weightage in the evaluation as suggested in the course outline

Teaching-Learning Methodology	Regular class room teaching will be done with following tools: • Conventional black board and chalk. • ICT tools such as projectors, smart boards, etc will also be used for better explanation of scientific components. Appropriate reference materials will also provide to the students as and when required from departmental library resources.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, student will be able to (As per Guidelines – III)	
1.	Apply a basic core of scientific and quantitative knowledge to enhance understanding ofcell structure and function at the molecular level.
2.	Develop and maintain a notebook of laboratory records.
3.	Utilize laboratory skills to enhance understanding of cell structure and function while participating in a group environment.

Suggested References: Include reference material from where a student is expected to study the said content in APA style. Reference websites can also be included. (As per Guidelines – IV)	
Sr. No.	Reference
1.	Cell Biology by T. Devasena, 2012, Oxford University press.
2.	Cytology (Cell Biology and Molecular Biology) by VK Agarwal and PS Varma,

	2000 4/e S Chand & Company, New Delhi.
3.	Cell and Molecular Biology by Prakash S Lohar, 2007, MJP publishers.
4.	The Cell, a molecular approach by Geoffrey M Cooper, 5 th Edition, 2009, ASM press, Washington
5.	Cell and Molecular Biology by Gerald Carp, 3rdEdition, 2002, John wiley & sons.

On-line resources available that can be used as reference material (As per Guidelines –V)

Sr. No.	On-line Resources
1.	https://nptel.ac.in/courses/102/103/102103012/
2.	https://onlinecourses.nptel.ac.in/noc21_cy15/preview

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