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

Paper Code	IS02CBMC55	Periods per week	04
Title of the paper	Biochemistry	Exam Duration	3 Hrs
Total Credit of the Paper	4	Total Marks	100

Course Objectives: (As per Guidelines – I)	1.To expose the students tothe importance of biologicalmacromolecules 2.Toenable the students to acquire knowledge in the quantitative and qualitative estimation of biomolecules 3. Tomake students study the influence androle of structure in function of biomolecules 4. To inculcate a thorough understanding on the role of biomolecules and their functions

Course Description		
Unit	Description	Weightage*
1.	Structure of water, Distribution of body water, Measurement of body water, Distribution of electrolytes in the body, Normal water balance and its regulatory mechanism, abnormal water and electrolytes metabolism	25%
2.	Introduction, Occurrence, Physiological importance, Classification of carbohydrates- Monosaccharides, Disaccharides, Oligosaccharides and Polysaccharides. Physiological properties of carbohydrates, reference carbohydrates. Asymmetric centres in Monosaccharide, optical isomerism, stereoisomerism, epimers, mutarotation, and diasterisomers. Configuration in sugars, cyclic structure, anomeric carbon atom, Fischer's projection formula, Haworth's representation, conformation in sugars. Physiological importance of maltose, lactose and raffinose and polysaccharides- starch and glycogen.	25%
3.	Amino acids and Proteins-Structure and Classification of amino acids, rare amino acids of protein, non-protein amino acids, amphoteric nature of amino acids, titration curve of Glycine. Physical properties of amino acids-stereo-specificity and optical activity. Denaturation of proteins.	25%
4.	Separation of Biomolecules: Centrifugation technique: Basic principle, Instrumentation and application ofcentrifugation. Techniques of chromatography: general principle,classification, methods and application of chromatography.	25%

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

Teaching-Learning Methodology (As per Guidelines –II)	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%
4.	Minimum Passing Criteria	

Course Outcomes: Having completed this course, student will be able to (As per Guidelines – III)	
1.	This course introduces thestudents to the basics of celland its components.
2.	This gives them a strongfoundation on the basic unit oflife.
3.	At the end of the course, thestudent has a strongfoundation on the functions ofthe cell.

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
	Biochemistry by LubertStryer, W. H. Freeman and Company. 4th /6th edition, 2000/2004 Hardback,
	Fundamentals of biochemistry: Life at the Molecular Level, by D. Voet, J. G. Voet, and C. Pratt, 3rd Edition, John Wiley and Co John Wiley & Sons, Inc., NewYork, , 2008
	Principles of Biochemistry by Albert Lehninger, W.H. Freeman & Company; 3rd edition (February 2000)
	Harper's Biochemistry : Harper, 27th Edition, McGraw-Hill Publishing Co; Robert K.

	Murray, Daryl K. Granner, Victor W. Rodwell, 2006
	Outlines of Biochemistry by Conn E E , Stumps P E and and Doi, R.H., John Wiley and sons, Singapore, 5th Edition – 2001

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/104/105/104105076/
2.	https://www.chem.purdue.edu/courses/chm333/
3.	https://www.chem.uwec.edu/chem452_f12/pages/lecture_materials/unit_I/lecture_1/overheads/Chem452-lecture_1-part_1-overheads.pdf