Vidyasagar University

Curriculum for B.Sc (General) in Biochemistry

[Choice Based Credit System]

Semester-I

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC1 [DSC-1A]		**C1T:**Biochemistry of Cell	Core Course-1	4	0	0	6	75
		C1P: Biochemistry of Cell (Practical)		0	0	4		
CC2 [DSC-2A]	TBD	**DSC-2A (other Discipline)**	Core Course-2				6	75
CC3 [DSC-3A]	TBD	**DSC-3A (other Discipline)**	Core Course-3				6	75
AECC		English	AECC (Elective)	1	1	0	2	50
Semester Total							**20**	**275**

L=Lecture, **T=**Tutorial, **P=**Practical, **CC =** Core Course, **TBD =** To be decided, **AECC=** Ability Enhancement Compulsory Course
DSC-1 = Discipline Specific Core of Subject-1, **DSC-2** = Discipline Specific Core of Subject-2, **DSC-3** = Discipline Specific Core of Subject-3.

Semester-I
Core Course (CC)

CC-1 : BIOCHEMISTRY OF CELL **Credits: 6**

C1T: Biochemistry of Cell **Credits 04**

Unit 1
Biomolecules in their cellular environment

The cellular basis of life. Cellular structures – prokaryotes and eukaryotes. Chemical principles in biomolecular structure. Major classes of biomolecules. Role of water in design of biomolecules.

Unit 2
Amino acids and peptides

Types of amino acids and their chemistry, derivatives of amino acids and their biological role. Introduction to biologically important peptides.

Unit 3
Sugars and polysaccharides

Basic chemistry of sugars, optical activity. Disaccharides, trisaccharides and polysaccharides - their distribution and biological role.

Unit 4
Nucleosides, nucleotides and nucleic acids

Structures and chemistry, DNA structures and their importance, different types of RNA. Unusual DNA structures, other functions of nucleotides.

Unit 5
Lipids

Various classes of lipids and their distribution, storage lipids, structural lipids in membranes, lipids as signals, cofactors and pigments.

Unit 6
Vitamins, coenzymes and metal ions

Occurrence and nutritional role. Coenzymes and their role in metabolism. Metal ion containing biomolecules - heme, porphyrins and cyanocobalamin; their biological significance.

Unit 7
Signaling molecules

Second messengers - cAMP, cGMP, IP3, diacyl glycerol, Ca2+, NO. Brief account of their importance and role in signalling and signal transduction.

C1P: Biochemistry of Cell (Practical) **Credits 02**

1. General safety procedures in a laboratory. Use of auto pipettes. Making solutions and buffer preparation - acetate and tris buffers.
2. Qualitative tests for biomolecules - carbohydrates, lipids, amino acids, proteins, bases and nucleic acids.
3. Separation of amino acids by paper chromatography.
4. Separation of sugars/bases by TLC and their identification.
5. Estimation of ascorbic acid in fruit juices.

Suggested Readings :

1. Lehninger: Principles of Biochemistry (2013) 6th ed., Nelson, D.L. and Cox, M.M., W.H. Freeman and Company (New York),
2. Textbook of Biochemistry with Clinical Correlations (2011) 7th ed., Devlin, T.M., John Wiley & Sons, Inc. (New York),.