Vidyasagar University

Curriculum for B.Sc (General) in Physiology

[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:** Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism	Core Course-1	4	0	0	6	75
		C1P: 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- I : Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism **credits 06**

C1T : Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism **credits 02**

Course Contents:

- **Cellular Physiology and Biophysical Principles**

Membrane physiology: structure and functions of cell and subcelluar membranes, cytoskeletal system, cell junctions and cell adhesion molecules, Physicocemical principles and Physiological importance of : Diffusion, Osmosis, Dialysis, Ultrafiltration, Surface tension, Adsorption, Absorption, pH and buffers, Colloids. Enzymes - classification, coenzymes, factors affecting enzyme action, regulation of enzymes- feedback, covalent and allosteric. Isozymes and non-protein enzymes

- **Biochemistry and Metabolism :**

Carbohydrates **:** classification , structure and properties
Proteins **:** Classification , order of structure (elementary idea), Amino acids**:** classification and properties
Lipids : classification. Fatty acids – Classification, and properties, lipoprotein – Classification and structure
Nucleic acid – structure of DNA and RNA
Vitamins – classification and functions. *Minerals* – functions of Sodium, Potassium, Calcium, Phosphorus, Iron, Zinc, Iodine and Fluoride.
Metabolism – Glycolysis, TCA cycle, Glycogenesis, Glycogenolysis. Gluconeogenesis, Beta oxidation of saturated fatty acid, Ketone bodies – formation and significance. Deamination, Transamination. Amino acid pool, Urea cycle, vitamins in metabolism

- **Digestive System:**

Alimentary cana1 and digestive glands – Structure in relation to functions. Composition, functions and regulation of secretion of digestive juices including bile. Digestion and absorption of carbohydrate, protein and lipid. Movements of the stomach and small intestine

C1P : Practical: Fresh tissue experiments & Identification of permanent slides **credits 02**

1. **Fresh tissue experiments:**

a) Examination & staining of fresh tissue: squamous, ciliated & columnar epithelium, skeletal muscle fibre (Rat/ Goat) by Methylene blue stain.
b) Transitional epithelium, mesentery (Rat/ Goat) (counter stain by Methylene blue)
c) Staining of adipose tissue by Sudan III or IV

2. **Identification of permanent slides:**

Bone, cartilage, lung, trachea, spleen, lymph gland, liver, salivary glands, pancreas, esophagus, stomach, small intestine, large intestine, ovary, adrenal, testis, thyroid, spinal cord, cerebellum, cerebral cortex, kidney, skin, tongue.