

VIDYASAGAR UNIVERSITY



Curriculum for 3-year B.Sc. (General)

Physiology

**Revised Syllabus under CBCS
(w. e. f. 2022-2023)**

**Vidyasagar University
Midnapore 721102
West Bengal**

Vidyasagar University

Curriculum for B.Sc. (General) in Physiology [Revised Syllabus w.e.f. 2022-23]

SEMESTER-I

Course Structure

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC1 [DSC-1A]		DSC-1AT: Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism	Core Course-1	4	0	4	6	75
		DSC-1AP: Fresh tissue experiments & Identification of permanent slides						
CC2 [DSC-2A]		DSC-2A: TBD (from other Discipline)	Core Course-2				6	75
CC2 [DSC-3A]		DSC-3A: TBD (from other Discipline)					6	
AECC (Elective)		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 (Elective) = Ability Enhancement Compulsory Course (Elective)

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

DSC-1A (CC-1): Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism Credits 06

DSC1AT: Cellular Physiology, Biophysical Principles, Biochemistry, Digestive system & Metabolism Credits 04

Course Contents:

• Cellular Physiology and Biophysical Principles

Membrane physiology: structure and functions of cell- Endoplasmic reticulum, Golgi complex, Peroxisome, Mitochondria, Ribosome.

Tissue- Structure, classification, distribution and function of different human tissues.

Physicochemical principles and Physiological importance of: Diffusion, Osmosis, Adsorption, Absorption, pH and buffers, Colloids.

Enzymes - classification, coenzymes, factors affecting enzyme action, Isozymes.

• 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, Beta oxidation of saturated fatty acid, Ketone bodies – formation and significance. Deamination, Transamination. Amino acid pool, Urea cycle.

• Digestive System:

Alimentary canal 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.

DSC1AP: Fresh tissue experiments & Identification of permanent slides (Practical)

Credits 02

Contents:

1. Fresh tissue experiments:

- Study of compound microscope
- Examination & staining of fresh tissue: squamous, ciliated & columnar epithelium, skeletal muscle fibre (Rat/ Goat) by Methylene blue stain.
- Transitional epithelium, mesentery (Rat/ Goat) (counter stain by Methylene blue)

2. Identification of permanent slides:

- Lung, spleen, liver, salivary glands, pancreas, oesophagus, stomach, small intestine, large intestine, ovary, adrenal, testis, thyroid, spinal cord, cerebellum, cerebral cortex, kidney, skin, tongue

Suggested Readings:

1. Text book of Medical Physiology, by A.C. Guyton, John E. Hall, Eleventh edition. Elsevier Saunders.
2. Vander et al's Human Physiology: The Mechanisms of Body Function; 9th Edition Eric P. Widmaier, Hershel Raff, Kevin T. Strang The Mc Graw-Hill Companies.
3. Human Physiology, From Cells to Systems Lauralee Sherwood, Brooks/Cole.
4. Best & Taylor's Physiological Basis of Medical Practice, edited by B.R Brobeck. The William and Wilkins Co.
5. Ganong's Review of Medical Physiology, by Kim E. Barrett et al., Lange Medical Book.
6. Harper's Review of Biochemistry by R K. Murry and others. Lange Medical Book, Prentice-Hall International.
7. Lehninger Principles of Biochemistry, by, D. L. Nelson and M. M. Cox, CBS Publishers Inc.
8. Text book of Biochemistry, by E.S. West, W.R. Todd, H.S. Mason, J.T. Van Bruggen, The Macmillan Company.
9. Biochemistry, by D. Das: Academic Publishers.
10. Biophysics and Biophysical Chemistry, by D .Das, Academic Publishers.
11. Samson Wright's Applied Physiology, edited by C.A. Keele. E. Neil & N. Toets. Oxford University Press.
12. Physiology, by R.M. Berne & M.N. Levy, B.M. Koeppen, B. A. Stanton, Mosby Co.
13. Basic Histology, by L.C. Jungquire, J. Carneiro& J.A Long; Appleton & Lange.
14. Neuroscience Third Edition Edited By D. Purves, G. J. Augustine, D. Fitzpatrick, W. C. Hall, A S.I. Lamantia, J.O. Mcnamara, S. M Williams, Publishers Sinauer Associates, Inc.
15. Histology - A Text and Atlas, by M.H.Ross&E.J.Reith, The Williams and Wilkins Company.
16. Bailey's Text Book of Histology, revised by W.M. Copenhaver; The Williams and Wilkins Company.
17. Human Physiology, by R.F. Schmidt & G. Thews, Springer-Verlag.
