# Vidyasagar University

## Curriculum for B.Sc. Honours in Nutrition [Choice Based Credit System]

### Semester-II

| Sl. No. | Name of the Subject | Nature | Code | Teaching Scheme in hour per week | | | Credit | Marks |
|---|---|---|---|---|---|---|---|---|
| | | | | L | T | P | | |
| C3 | **C3T:** Nutritional Biophysics & Biochemistry | Core Course-3 | | 4 | 0 | 0 | 6 | 75 |
| | **C3P:** Nutritional Biophysics & Biochemistry (Practical) | Core Course-3 [Practical] | | 0 | 0 | 4 | | |
| C4 | **C4T:** Human Physiology | Core Course-4 | | 4 | 0 | 0 | 6 | 75 |
| | **C4P:**Human Physiology ( Practical) | Core Course-4 [Practical] | | 0 | 0 | 4 | | |
| GE-2 | GE-2 | GE | | | | | 4/5 | 75 |
| | GE-2 | GE | | | | | 2/1 | |
| AEC C-2 | Environmental Studies | AECC | | | | | 4 | 100 |
| | | | | **Total Credits =22** | | | | |

**L= Lecture, T= Tutorial, P=Practical**

**AECC- Ability Enhancement Compulsory Course**: Environmental Studies.

**Interdisciplinary/Generic Elective (GE) from other Department**

[**Four papers are to be taken and each paper will be of 6 credits**]: Papers are to be taken from any of the following discipline: **Chemistry/Physiology/Botany /Zoology**

**/Computer Sc/Microbiology/Bio-Technology/Mathematics/Statistics**

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# Semester-2

## Core Courses

## Core -3

**CC-3 Nutritional Biophysics and biochemistry Credits 06**

**C3T Nutritional Biophysics and biochemistry Credits 04**

1. Biochemistry: Definition, objectives, scope and interrelationship between biochemistry and other biological science.
2. Biophysics- general idea of biophysics in nutrition
3. Basic process and nutritional importances of Diffusion,Osmosis, Absorption, Viscosity, Surface tension, Colloids.
4. Principles of Thermodynamics and its importance in nutrition.
5. Acid, Base, Buffer, pH and Acid-Base balance.
6. Molecular aspects of transport; Passive diffusion, facilitated diffusion, active transport.
7. Enzymes: Definition, types and classification of enzymes, definition and types of coenzymes. specificity of enzymes, Isozymes, enzyme Kinetics including factors affecting enzyme action, velocity of enzyme catalyzed reactions, enzyme inhibition.
8. Intermediary metabolism:
   a) Carbohydrate Metabolism, Glycolysis, TCA cycle & energy generation, gluconeogenesis, glycogenesis, glycogenolysis, blood sugar regulation.
   b) Lipids : Oxidation and biosynthesis of fatty acids (saturated &mono-unsaturated) : Synthesis and utilization of ketone bodies, Ketosis, fatty livers.
   c) Proteins : General reaction of amino acid metabolism, urea cycle.
9. Lipoproteins : Types, composition, role and significance in disease (in brief)
10. Introduction to Nucleic acids: Structure, replication, transcription, genetic code (in brief) elementary knowledge of biosynthesis of proteins.
11. Fluid, Electrolytes and Acid-Base balance brief.

**C3P Nutritional Biophysics and biochemistry(Practicals) Credits 02**

1. To study the general properties of urease amd salivary amylase.
2. Preparation of buffer of particular PH (Phosphate buffer, tris buffer)
3. Determination of strength of $KMNO_4$ using primary standard (oxalic acid).
4. Electrophoresis
5. Dialysis

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## Core -4

**CC-4: HUMAN PHYSIOLOGY** **Credits 06**

**C4T: HUMAN PHYSIOLOGY** **Credits 04**

1. Cell structure and function
2. Blood cells: Haemoglobin, Blood groups, Coagulation factors, Anaemia.
3. Skeletal System: bones, joints and bone deformities in brief.
4. Cardiovascular System: Cardiac cycle, Cardiac output, Blood pressure, Hypertension, Radial Pulse
5. Lymphatic System: Lymph glands and its function, Splen- Structure and functions.
6. Respiratory System:- Ventilation, functions, Lungs volume and capacities.
7. Gastrointestinal System: a. Structure of various parts of the GI tract b. Digestion and absorption of Carbohydrate, protein and fat. (Digestion and absorption of Carbohydrate, protein and fat repeated in CC2T 6, 7, 8)
8. Endocrinology: List of endocrine glands, Hormonestheir secretion and function (in brief)
9. Excretory System: Structure of Nephron, formation of urine.
10. Central Nervous System: Parts, Sliding filament theory, neuromuscular junction, wallerian egeneration, Motor Nervous System- Upper motor Nervous System and lower motor Nervous System. Sensory Nervous System, Sympathetic and Parasympathetic nervous system.
11. Skin: Structure and function of skin
12. Reproductive System: a. Structure and functions of male and female reproductive organs, Menstrual cycle, Puberty, Menopause, fertilization and development of fertilized ovum, placenta and its function.
13. Special senses: Structure and function of eye and ear, common diseases in eye and ear (in brief).

**C4 P: HUMAN PHYSIOLOGY (Practicals)** **Credits 02**

1. Identification of prepared Slides:
(a) Lungs, (b) Supra Renal Gland, (c) Thyroid, (d) Pituitary (e) Testis, (f) Ovary, (g) Kidney, (h) Liver, (i) Pancreas, G) Small Intestine, (k) Large Intestine, (1) Spinal cord, (m) Cerebellum.
2. Preparation of blood film and identification of white blood cells, Differential count.
3. Estimation of Haemoglobin.
4. Determination of Bleeding time and clotting time of blood, Blood grouping.
5. Measurement of Blood pressure and Pulse Rate.
6. Elicitation of Reflexes and jerks.
7. Estimation of haemoglobin, RBC, WBC, TLC, DLC and ESR.

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## Generic Elective

## GE-2 [Interdisciplinary for other department]

**GE-2 : FOOD SCIENCE** **Credits : 06**

**GE-2 T : FOOD SCIENCE**

1. Cereals and Millets: Cereal products, breakfast cereals, fast foods. Structure, processing, storage, use in various preparations, variety, selection and cost.
2. Pulses and Legumes: Production (in brief), structures, selection and variety. Storage, processing and use in different preparations. Nutritional aspects and cost.
3. Milk and Milk-products: Composition, classification, selection quality and cost, processing, storage and uses in different preparations. Nutritional aspects, shelf - life and spoilage.
4. Eggs: Production, grade, quality, selection, storage and spoilage, cost, nutritional aspects and use in different preparations.
5. Meat, Fish and Poultry: Types, selection, purchase, storage, uses, cost, spoilage of fish poultry and meat, uses and preparations.
6. Vegetables and Fruits: Types, selection, purchase, storage, availability. Cost of use and nutritional aspects of raw & processed products and use in different preparations.
7. Sugar and Sugar products: Types of natural sweeteners, manufacture, selection, storage and use as preserver, stages in sugar cookery.
8. Fats and Oils: Types and sources (animal and vegetable), processing, uses in different preparations, storage, cost and nutritional aspects.
9. Raising and Leavening agents: Types, Constituents, Uses in cookery and bakery, Storage.
10. Food Adjuncts: Spices, Condiments, Herbs, Extracts, Concentrates, Essences, Food Colours. Origin, classification, Description, uses, Specifications, procurements and Storage.
11. Convenience Foods: Role, types, advantages, uses, cost and contribution to diet.
12. Salt : Types and uses.

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13. Beverages : Tea; Coffee. Chocolate and Cocoa Powder-Processing, cost and nutritional aspects, other beverages-Aerated beverages, juices.
14. Preserved Products : Jams, Jellies, Pickles, Squashes, Syrups types, composition and manufacture, selection, cost, storage, uses and nutritional aspects.
15. Food Standards : ISI, Agmark, FPO, MPO, PFA.
16. New food: fast food, junk food, GM food, Free food
17. Food, preservation, food processing, food adulteration and food storage.

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