



South Calcutta Girls' College
Department of Zoology
Four-Year (Honours and Honours with Research) Programme

PROGRAMME OUTCOME (PO)

2023-2024

1 ST SEMESTER (CCF, 2022)

- Raising awareness regarding basic concepts of biological sciences and modern theories in biological contexts.
- Develop professional ethics and leadership qualities in biology, fostering integrity and innovation.
- After completing B.Sc (H) in Zoology students will be able to—
 - Enroll in different types of Research and innovation oriented course.
 - Apply for posts of laboratory attendant.
 - Pursue Higher Studies
 - Appear in various competitive Examinations such as school service commission examination, primary teachers' recruitment examination, WBCS, IAS, , Rail, Banking etc.
 - The student will get the opportunity to work in different NGOs.

PROGRAM SPECIFIC OUTCOME (PSO)

2023-2024

1 ST SEMESTER (CCF, 2022)

This course enables the students to develop critical skills that will help them succeed in any career.

- Develop innovative skills which will enable to develop the knowledge and skills required for employment such as microbiology, cell biology and bio technology on the level of the gene, genome, and their functions.
- Develop an expertise in identification, Structural characteristics, life history & ecology of insects, pests & predators/ parasites.
- Gain knowledge about the basic principles & strategies of management of insect parasites, pests & forensic medicines.
- Aspirants of entomology will seek basic knowledge & technologies used in Forensic entomology, Sericulture, Apiculture, Biological control of pests, Economic Entomology etc.
- The acquired knowledge & skill developed in the field of applied entomology will help in recognizing the applications of latest technologies in field of agriculture, better human health conditions.
- To carry out analysis of biological data, perform laboratory procedure with suitable technique in cell and molecular biology, immunology and microbiology.
- After completing B.Sc (H) in Zoology students will be able to--
 - Appear for Zoology related jobs (Forest ranger, Lab attendant etc.)
 - Apply for various official posts in Zoological Survey of India, Forestry and veterinary science.

COURSE OUTCOMES (CO)
2023-2024
1 ST SEMESTER (CCF, 2022)

CC1: Cell Biology

UNIT-I:

To Explain the Structure of the Plasma Membrane: Lipid Bilayer (Phospholipids and Cholesterol), Peripheral and Integral Membrane proteins, Glycolipids and Glycoproteins (basic concept of Glycocalyx), Fluid Mosaic Model with special reference to Lipid rafts, Mobility of membrane lipids (FRAP assay) and Mobility of Membrane Proteins (Frye-Edidin Experiment); Cell-cell junctions; Transport through plasma membrane.

UNIT-II:

To understand the basic structure and function of ER, Golgi and Lysosome and their interaction with protein sorting and their transport mechanism

UNIT-III:

To understand the structure and function of mitochondria, their semi-autonomous nature, it's chemiosmotic hypothesis, oxidative phosphorylation, structure and function of Peroxisome

UNIT-IV:

To know the structure and function of different cytoskeletal proteins i.e. microtubules, actin filaments, intermediate filaments and extracellular matrix

UNIT-V:

To Define Nuclear envelope, nuclear pore complex (transport not included), Kinetochore and centromeric DNA; Chromatin and levels of its packaging. Euchromatin & Heterochromatin, Position effect variegation. Chromatin remodeling complex.

UNIT-VI:

To know different phases of cell cycle and regulation of cyclinCDK proteins, mechanism of apoptosis. The cell regulation during cancer. Involvement of protooncogene and tumor suppressor gene.

UNIT-VII:

To Understand Signalling system: Modes of cell-cell signalling; Types of Signalling molecules
Signalling receptors: Types and example with special reference to regulation of G protein, Adenyl cyclase-cAMP, Enzyme linked: RTK (ras-raf) and JAK/STAT

UNIT-VIII:

Apply their knowledge in Animal Cell Culture: Primary cell culture and Cell line. Sub cellular fractionation and Ultra centrifugation. Freeze fracture Replication and Freeze Etching, Principle of Light Microscope: Bright field, Phase contrast microscope, Fluorescence Microscope with reference to FRET, Principle of SEM & TEM. Cryo fixation and use of frozen specimen; Specimen Preparation for Electron Microscopy

SEC1: Applied Entomology

UNIT-I:

To know the Insect diversity & adaptation: General concepts - Morphological adaptation of insects: head & antenna, mouthparts of honey bee & cockroach; thorax & thoracic appendages – legs & wings. General characteristics of Class Insecta & living orders with examples: Orthoptera, Dictyoptera, Hemiptera, Coleoptera, Lepidoptera, Diptera, Hymenoptera, Anoplura, Siphonaptera.

UNIT-II

To understand the Concepts of vectors, mechanical and biological vectors, modes of transmission, biological vector and disease cycle, biology of Anopheles, Culex and Aedes. Study of mosquito borne diseases -Malaria, dengue and filariasis. Control of mosquitoes. Biology of Musca domestica-diseases relationship, control measures Biology and systematics of Bed bug, Cimex lectularis, disease relationship and Control of bed bug. Forensic Entomology: General perceptions and status of Forensic Entomology; insects and other arthropods of Forensic importance, pattern of insect succession on carcass, PMI and its emission process, application and limitations.

UNIT-III

To gain knowledge about concept of insect pest; Economic Injury Level, Economic Threshold Level, Dynamics of EIL. Pest of major crops (Life cycle, nature of damage& control): Pest of paddy, jute, brinjal, stored grains. Invasive insect pests of India & their consequences. Insect Pest control: Chemical, Mechanical, Cultural & Biological control measures; Integrated Pest Management. Study of appliances used in pest control: Dusters, sprayers (categories), agricultural aircrafts.

UNIT-IV:

To know the Types of Silk Moths with special reference to their scientific name, geographic distribution, & host plants. Life cycle of *Bombyx mori*; Structure of Silk Gland; Voltinism, Rearing of Mulberry silkworm, Reeling & extraction of silk, Mulberry cocoon management, Mulberry plant types & cultivation, Common diseases & pests of Mulberry silkworm & their control measures. Prospects of Sericulture in West Bengal, & employment potential in sericulture.

UNIT-V:

To understand various domesticated species of honey bee, social organization and life cycle of honey bee, modern method of bee keeping, Newton box and Langstroth box, extraction of honey and composition of honey, pests, parasites disease and their control measures, bee economy: apiculture products and their uses

