

PHYSIOLOGY

Programme Specific Outcomes

Programme offered by the Department	Outcomes
B. Sc. Honours Programme	<p>PSO1: Students gain knowledge and skill in the fundamentals of Human Physiology and understand the complex interactions among various living organisms.</p> <p>PSO2: Recognized the relationships between structure and functions at different levels of biological organization (e.g., molecules, cells, organs, organisms, populations, and species) for humans.</p> <p>PSO3: Gains knowledge about research methodologies, effective communication and skills of problem solving methods and to inculcate the scientific temperament in the students and outside the scientific community.</p> <p>PSO4: Perform procedures as per laboratory standards in the areas of haematology, histology, qualitative and quantitative biochemistry, experimental physiology and various human experiments. And develop research oriented skills.</p> <p>PSO5: Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of physiological experiments.</p>
B. Sc. Programme Course (General)	The students understand the basic concepts in System Physiology, Biochemistry, Microbiology, Immunology and molecular biology. He/she has been updated with the recent trends in the subject. The students also build a sound base for various post graduate courses in Physiology, biotechnology, clinical nutrition, biomedical science and in the field of other related subjects of life science.

PHYSIOLOGY

Course Outcomes (COs)

B. Sc. Honours Programme

Semester	Course Code	Course Title	Outcomes (in 100 words)
I	CC1	Cellular Basis of Physiology	Learning the cellular basis of physiology
	CC2	Biological Physics and Enzymes	Learning the biophysical principle of physiological functions and enzyme kinetics
II	CC3	Physiology of Nerve and Muscle cells	Learning the nerve muscle connection and molecular basis of muscle contraction
	CC4	Chemistry of Bio-molecules	Learning the fundamental Chemistry of Biomolecules and their importance in the formation of basic building blocks
III	CC5	Circulating Body Fluids	Learning the features and functional aspects of hematology
	CC6	Circulation	Learning the regional circulation and their peculiarities
	CC7	Functions of Nervous System	Learning the structural and functional basis of central nervous system

	SEC1	Clinical Biochemistry	<p>At the end of the course, students will be able to :</p> <p>Discuss the fundamental biochemistry knowledge related to health</p> <p>Explain the clinical significance of the laboratory tests</p> <p>Diagnosis of clinical disorders by estimating biomarkers</p> <p>Determine various substances including substrates, enzymes, hormones, etc and their use in diagnosis and monitoring of disease are applied</p> <p>Evaluate the abnormalities which commonly occur in the clinical field</p> <p>Review the information from each category of tests and develop a protocol for disease diagnosis</p> <p>Create awareness of different lifestyle diseases increasingly found in present day</p>
IV	CC8	Energy Balance, Metabolism and Nutrition	Learning the fundamentals of nutrition and biochemical basis of metabolism
	CC9	Gastrointestinal Functions	Learning the process of digestion and functions of GI tract
	CC10	Respiration	Learning the mechanism of respiration, gas transport and acclimatization
	SEC2		
V	CC11	Special Senses	Learning the molecular basis of sensory physiology
	CC12	Endocrinology	Learning the functional aspects of endocrine glands and regulation of metabolism
	DSE1	Biological Statistics	<p>Upon completion of this course, the students will be able to:</p> <p>Describe various application area of biostatistics.</p> <p>Distinguish different types of data and sampling techniques.</p> <p>Summarize, organize and display quantitative data.</p>

			<p>Calculate and interpret measures of central tendency and variability in statistical data.</p> <p>Compute and interpret the result of correlation and regression analysis.</p> <p>Compare different population sample using ANOVA.</p> <p>Recall the characteristics of probability distribution.</p> <p>Identify appropriate tests to perform hypothesis testing and experimental design for biological experiment and interpret the output adequately..</p> <p>Explain the characteristics and use of statistical software and packages of biostatistics.</p>
	DSE2	Microbiology and Immunology	<p>Upon completion of this course, the students will be able to:</p> <p>Understand the history and classification in microbiology.</p> <p>Recall the use of culture, staining and preservation techniques in microbiology.</p> <p>Describe the structure and reproduction of bacteria</p> <p>Understand structure, types, replication and culture techniques of viruses.</p> <p>Understand the diseases caused by microorganisms and their transmission.</p> <p>Identify and describe the types, organs, cells of immunity and immunological processes.</p> <p>Predict antigen- antibody interactions and serological tests and describe antigens and immunoglobulins.</p> <p>Analyse the immune mechanisms behind autoimmunity, hypersensitivity, immunodeficiency and transplantation rejection.</p> <p>Understanding about vaccines and recent trends in immunization.</p> <p>Create a positive attitude towards maintaining the proper community health.</p>

VI	CC13	Reproductive Functions	Learning the physiological basis of reproduction and development of foetus
	CC14	Formation and Excretion of Urine	Learning the formation of urine and mechanism of micturation
	DSE3	Sports Exercise and Ergonomics and Occupational Physiology	<p>Apprehend the components of a work system, seeking to adapt the work to the worker and describing the limits to be respected in the performance of work (area of Labour Ergonomics).</p> <p>To highlight the interrelationship between ergonomics and organizational efficiency, aiming at maintaining worker safety and health, especially in the prevention of musculoskeletal injuries.</p> <p>Assimilate the main interventions in ergonomics, namely in the identification and recognition of the risks potentially induced by the inadequacy of equipment and jobs.</p> <p>Identify the objective, scope and applicability of the main ergonomic checklists in the area of occupational health.</p> <p>Recognize the importance of ergonomic intervention at the level of the workers' postures, physiological dynamics of the sequential movements of the work, design of workplaces and tools.</p>
	DSE4	Environmental Physiology	The student knows the principles of living species environmental physiology (how the living organism obtains and maintains the homeostasis at molecular, cellular and tissue levels, in the context of changes in the surrounding environment; the nutritional characteristics of foods, nutritional status, expenditure and energy needs, the physiological use of nutrients in the diet, the psycho physiological and neurobiological foundations of the behaviour and cognitive and emotional interaction between the subject and the environment).

<p>I / III</p>	<p>GE Paper 1</p>	<p>Cell & its Biophysical & Biochemical principles</p>	<p>Students will demonstrate a core knowledge base in the theory and practice of modern Biochemistry and Biophysics.</p> <p>Students will function successfully in the laboratory and use safe laboratory practices.</p> <p>Students will critically evaluate data and design experiments to test hypotheses relevant to the practice of Biochemistry and Biophysics.</p> <p>Students will read and evaluate primary literature in the discipline.</p> <p>Students will effectively communicate scientific data and ideas, using various formats appropriate for different target audiences.</p> <p>Students will use databases, computational tools and other online resources effectively.</p> <p>Students will demonstrate awareness of ethical issues in the practice of science.</p>
<p>II / IV</p>	<p>GE Paper 2</p>	<p>System Physiology</p>	<p>At the end of the course students should:</p> <p>Have an enhanced knowledge and appreciation of mammalian physiology.</p> <p>Understand the functions of important physiological systems including the cardio-respiratory, renal, reproductive and metabolic systems.</p> <p>Understand how these separate systems interact to yield integrated physiological responses to challenges such as exercise, fasting and ascent to high altitude, and how they can sometimes fail.</p> <p>Be able to perform, analyse and report on experiments and observations in physiology.</p> <p>Be able to recognise and identify principal tissue structures.</p>