



Integrated M.Sc Biology

PROGRAMME SPECIFIC OUTCOME

PSOs	Program Specific Outcomes
PSO1	Understand the basic biological concepts and their significance in life and sustenance of life.
PSO2	Understand the roles of various branches of biology, developments in biological research and its integrated approach in various disciplines.
PSO3	Understand and develop technical skills in biological sciences especially biochemistry, biophysics, biotechnology, bioinformatics and biostatistics.
PSO4	Perform laboratory procedures as per standard protocols in the areas of biological diversity, systematics, cell biology, genetics, biochemistry, molecular biology, microbiology, physiology, immunology, developmental biology, environmental biology, ethology, evolution, biostatistics, bioinformatics and science methodology.

COURSE OUTCOME

CORE COURSES

BIO1IB01T: BIOMOLECULES

- ❖ To understand the importance of biomolecules (carbohydrates, lipids, proteins, nucleic acids, vitamins etc.)
- ❖ To identify the chemical diversity of biomolecules in shaping the biological structure and function
- ❖ To appreciate and explain how complex living systems are built from a handful of simple atoms
- ❖ To correlate the molecular interactions in the aqueous environment of the cells and their unique functions to life
- ❖ To explain the principles in bioenergetics and laws of thermodynamics based on molecular interactions and kinetics
- ❖ To calculate and plot the function of enzymes as biological catalysts
- ❖ To derive the essentiality of the biomolecules to sustain diverse life forms in our planet

BIO2IB02T: ECOLOGY, BIODIVERSITY AND CONSERVATION BIOLOGY

- ❖ Understand about the structure and function of the environment
- ❖ Explain the ecosystem functioning through energy flow and nutrient cycling
- ❖ Explain the interaction of the environment with the living systems
- ❖ Understand and describe the ecological balance existing in nature
- ❖ Create awareness about Biodiversity and Nature Conservation
- ❖ Understand the threats to biodiversity, and strategies adapted for the conservation of diversity of organisms
- ❖ Identify and describe the various international strategies for conserving biodiversity
- ❖ Enumerate the methods to monitor and estimate diversity

BIO3IB03T: PRINCIPLES OF TAXONOMY AND RESEARCH METHODOLOGY

- ❖ Describe the principles of classification and nomenclature
- ❖ Practice taxonomic procedure
- ❖ Describe the ethical concerns in practicing Taxonomy
- ❖ Explain science, its importance, disciplines and the major steps in formulating a hypothesis
- ❖ Explain the various hypothesis models, theory, law and importance of animal models, simulations and virtual testing
- ❖ Illustrate the principles and procedures in designing experiments and elaborate the requirements for carrying out experiments
- ❖ Describe the ethical concerns in practicing science

BIO4IB04T : BIOLOGICAL LABORATORY TECHNIQUES

- ❖ Understand the basic laboratory techniques used in routine biology lab work.
- ❖ Understand the principles involved in the working of equipment commonly used in biology laboratories
- ❖ Acquire knowledge on preparation of lab specimens for display in biology museums and also for other laboratory purposes.
- ❖ Understand the basic techniques involved in the experiments related to various fields of biological sciences like histology, microbiology, tissue culture and molecular biology.

COURSE OUTCOME

GENERAL COURSES

GEN3IA11: BIOCHEMISTRY

- ❖ Describe the scope of Biochemistry.
- ❖ Describe the energy releasing and energy storing mechanisms of organisms
- ❖ Explain different pathways through which carbohydrates are processed by organisms.
- ❖ Describe the mechanisms of synthesis and breakdown of lipids, amino acids and nucleic acids in biological systems.
- ❖ Appreciate the role of hormones in the integration of metabolic activities.
- ❖ Explain different aspects of enzyme activity.
- ❖ Describe the role of mitochondria and chloroplast terminal reactions of different metabolic activities.

GEN3IA12: ENVIRONMENTAL SCIENCE AND WATER MANAGEMENT

- ❖ Understand the need of environmental awareness
- ❖ Explain the role of atmosphere, lithosphere and hydrosphere in shaping the environment
- ❖ Understand the interactions between abiotic and biotic factors of the environment
- ❖ Familiarization of the fundamental chemistry underlying the composition of air, water and soil
- ❖ Understand the methods used in monitoring and assessment of environmental changes
- ❖ Identify the physical characteristics of ground water and surface water
- ❖ Familiarization of the fundamental measurements used in hydrological studies
- ❖ Understand the importance of water management and conservation

GEN41A13: BIOTECHNOLOGY

- ❖ Understand scope and function of Biotechnology
- ❖ Explain the role of biotechnology to solve in environmental related issues
- ❖ Understand and describe the microbial role in human welfare
- ❖ Express the concerns over modern plant biotechnology & the process of plant cell culture development.
- ❖ Understand the role of tissue culture in organ development
- ❖ Identify and describe the role of biotechnology for disease diagnosis
- ❖ Familiarization of the methods in animal biotechnology and genetic engineering

GEN41A14: GENETICS

- ❖ Understand the historical perspectives of genetics
- ❖ Create awareness of Mendelian genetics, their principles and gene interaction
- ❖ Understand about chromosomal aberrations and structure of chromosomes
- ❖ Acquire a basic understanding on human genetics and heredity
- ❖ Explain on how genes exert their role on human health and illness.
- ❖ Understand biological evolution at the genetic level
- ❖ Understand how the genetic knowledge is applied in medicine
- ❖ Explain the genetics of microbial organisms and how this knowledge can be used for the control of microbial pathogens