

Department of Zoology

Shri Lal Bahadur Shastri Degree College, Gonda

Programme Outcomes and Course Outcomes (PG)

Programme Specific Outcomes (PSOs)

1. Developing deeper understanding of key concepts of biology at biochemical, molecular and cellular level, physiology and reproduction at organismal level, and ecological impact on animal behaviour.
2. Developing the concept of animal adaptation by exploring the diversity of functional characteristics of various kinds of organisms which is closely related to evolutionary processes and environmental changes.
3. Understanding of Mendel's principle, its extension and chromosomal basis; chromosomal anomalies and associated diseases; developing concepts of regulation of gene activity in prokaryotes and eukaryotes of transcriptional and post transcriptional level.
4. Development of an understanding of animal science for its application in entomology, apiculture, aquaculture, agriculture and modern medicine.
5. Develop an information about and basic concept of developmental biology elucidation of early embryonic development and organogenesis of invertebrates and vertebrates, explanation of embryonic stem cells and their application.
6. To understand the basic components of computers, software (operating system) and application of software used in biological and statistical studies.
7. Development of theoretical and practical knowledge in handling the animals and using them as model organisms.
8. The theoretical project work is aimed to calculate ability to develop a research question, organize relevant available literature and development of technical writing skill.
9. To understand the impact of chemicals on biodiversity of microbes, animals and plants; Bioindicator and biomarkers of environmental health. Biodegradation and bioremediation of chemicals; competition and existence; intraspecific and interspecific interactions.

Course Outcome- Semester I

Paper I – Non-Chordata

Course Outcomes - After the course the students will be able to understand the basics of this course. Larval forms in Echinodermata; Affinities of Echinodermata and Hemichordata; Brief outlines of the structure and affinities of minor phyla. Get benefit of this course in various competitive examinations.

Paper II – Biological Tools and Techniques

Course outcomes - To get the ideas of the media preparations and sterilization, Inoculation and growth monitoring, use of fermentation, microbial Assays and separation and identification of biomolecules by Chromatography: Paper and thin layer Chromatography, Gel exclusion Chromatography. This course is useful in various competitive exams like CSIR-NET etc.

Paper III – Comparative Animal Physiology

Course outcomes - To study the osmotic conformity and role of membranes in ionic regulation: Stenohaline, Euryhaline animals, Hypo and Hyper environment and terrestrial life and pattern of excretion in different animals. After the course the students get to benefit from this course in various national and international competitive examinations.

First Elective (1) – Toxicology and Animal Behaviour

Course Outcomes - Study is useful to physiochemical and bacteriological sampling and analysis of water quality. An introduction to behavior and mechanisms of behavior, various types of communications. This course is also helpful for the study of learning and instincts, conditioning, habituation, sensitization. This course is useful in various competitive exams like, UGC-NET, CSIR-NET, Civil service examinations etc.

First Elective (2) – Biostatistics, Computational Biology and Bioinformatics

Course Outcomes - Introduction to basic components of computers, Software (operating systems) and application software used in biological and statistical studies. An overview of database search data mining, data management and interpretation. An introduction and learning of Probit Log Analysis for interpretation of toxicity data.

Course Outcome- Semester II

Paper I – Chordates: General Account

Course outcomes: The student at the completion of the course will be able to:

- *demonstrate comprehensive identification abilities of chordate diversity*
- *explain structural and functional diversity of chordate*
- *explain evolutionary relationship amongst chordate*

Paper II – Systematics and Evolution

Course outcomes: The study of the DNA fingerprinting & Molecular markers for detection evaluation of polymorphism, RFLP, RAPD etc and numerical taxonomy, for useful to students for research methodology and further study of research work in different topics. This course is useful in various competitive exams like CSIR-NET etc.

Paper III – Cell Biology

Course outcomes: The course will lay down the foundation of biochemistry among students where they will develop a deep understanding of the structure of biomolecules like proteins, lipids and carbohydrates and how simple molecules together form complex macromolecules. They will be able to understand the thermodynamics of enzyme catalysed reactions and mechanisms of energy production at cellular and molecular levels.

Third Elective (1) – Immunology

Course outcomes: The student at the completion of the course will be able to understand:

- *the scientific reasoning exhibited in experimental life science.*
- *an in depth understanding about the Immune System & its elaborate mechanisms.*
- *state of art information about recent trends in Immunotherapy in case of several diseases like cancer, hepatitis etc*

Third Elective (2) – Histology and Histochemistry

Course outcomes: The student at the completion of the course will be able to understand:

- *the basic histological tools and techniques.*
- *use of various histo-chemicals to perform a variety of experiments.*
- *the methods to design and perform experiments on their own.*

Course Outcome- Semester III

Paper I – Principles of Endocrinology

Course outcomes: The course will enable the students:

- *To develop an understanding of the basic endocrinology*
- *To study the endocrine regulatory molecules mediating physiology and behaviour*
- *To study the neural and endocrine components of physiological function and neuroendocrine regulation*
- *To understand the role of hormones in metabolic regulation and maintaining homeostasis*
- *To understand the integrative working of signalling system*

Paper II – Developmental Biology

Course outcomes: The student at the completion of the course will be able to understand:

- *a variety of interacting processes, which generate an organism's heterogeneous shapes, size, and structural features,*
- *how a cell behaves in response to an autonomous determinant or an external signal,*
- *and the scientific reasoning exhibited in experimental life science.*

Paper III – Principles of Ecology and Wildlife

Course outcomes: The student at the completion of the course will be able to understand:

- *basic concepts of biosystematics, evolutionary biology and biodiversity which will enable the students not only to understand the subjects but also to solve the biological problems related to the environment,*
- *principles of taxonomy for identification, classification and naming the organisms scientifically,*
- *origin and modification of various life forms during various time scales.*

Course Outcome- Semester IV

Paper I – Genetics and Molecular Biology

Course outcomes:

By studying, the students get ideas of this course including sex chromosome, sex determination, multiple allelism, Numerical and structure chromosome aberrations and their significance, DNA replication, Transposable elements in prokaryotes and eukaryotes; Role of transposable elements in genetic regulation for help in to the research work. Students benefit from this course in various competitive examinations. An introduction to structure of nucleic acids, folding motifs, conformation flexibilities, denaturation, renaturation, kinetics of hybridization, super-coiling of DNA, packaging of DNA in the nucleus, structure of chromatin, chromatin territories used for the students for further study. regulation of Pre-mRNA Processing, micro RNA and other non-coding RNAs, degradation of RNA. Description of transport across the nuclear envelope and stability of RNA, processes of nuclear import and export and their regulation, degradation of RNA. This course is useful in various competitive exams like CSIR-NET etc.

Paper II – Biochemistry

Course outcomes:

To study the Kinetics of enzyme of reaction and kinetic of enzyme catalyzed reactions, order of enzyme reaction, rate equations, two substrate reactions; Temperature Coefficient, Activation Energy; Enzyme Inhibition, Competitive and non-competitive inhibitors; Applications of enzyme inhibition techniques in pest control, Allosteric Enzyme. This course is useful in various competitive exams.