

## **School of Studies in Zoology Jiwaji University, Gwalior**

The school of Studies in Zoology was established in 1971. The main objectives of the school has been to impart quality teaching and training to the students on various aspect of Zoological sciences, including cell biology, endocrinology, fisheries, aquatic biology, wildlife, Neurobiology, Human Genetics, Toxicology, Insect Biology, etc. Based on the achievements, it has been upgraded to the status of Centre of excellence. The department received extra mural research grants from various Govt. funding agencies (DBT, DST, DAE, CSIR, ICMR, MPCST, MoEF, DHR, UGC, AYUSH etc.) through its faculty members. Department has also received UGC-SAP Grant thrice and DST-FIST three. These research and developmental grants have helped develop the departmental teaching and research facility to an advance level, comparable to any national level teaching department. The department is running programs in

Master of Science (M.Sc.)

Master of Philosophy (M.Phil)

Doctor of Philosophy (Ph.D.)

### **Programme Outcomes (POs)**

The purpose of inducting zoology program at the University was to provide students Theoretical and Practical knowledge in various areas of zoological science and to helped them build-up strong carrier in education and research. The program has initiated two other independent programs on Neuroscience and Molecular Human Genetics, as offshoots of Zoology, to provide specialized knowledge to the students in these areas. The faculty members are putting all efforts to fullfill all the requirement of students of these courses.

The major objectives of the department are as follows:

1. To bring innovation and excellence in teaching and research in the area of Zoological science.
2. To organize community health services and environmental management.
3. To generate possible employment opportunities for the students through Job oriented short-term training courses, such as bee Keeping, Seri culture, wildlife tourism, fish culture, frog culture, poultry, etc.
4. To train the students in various biomedical technologies and to develop expertise in them for advance research and professionalism

### **Programme Specific Outcomes (PSOs)**

The course curriculum of zoology has been designed to prepared the Master's students to attend the following program specific outcomes:

- PSO1.** The ability to understand and interpret the various biological Phenomena related to fundamental principles and health related aspects.
- PSO2.** To apply the skill developed during the studies in their future teaching and research activities and to increase their employability.
- PSO3.** To develop critical thinking power and innovative ideas of translational importance.
- PSO4.** To build-up confidence in venturing into basic and advance researches leading to academic achievements at national as well as international levels.
- PSO5.** To make the students competent enough to teach and train others later in their academic lives.
- PSO6.** To inculcate ethics and professionalism in the students to perform and extend services to the peoples and communities for their betterment.

### **Course Outcomes (COs) I-M.Sc. Programmes**

#### **CBCSZ-101- CBCSZ-106**

- CO1.** To learn advance principles of structure and function of Animals from various taxonomic groups and to understand their possible evolutionary relationships.
- CO2.** To understand the fundamental principles of Genetics and Cytogenetics and the pattern of inheritance of traits.
- CO3.** To learn about the Structural and functional characteristics of difference cell types and their role in life forms.
- CO4.** To provide practical training to visualise the organismic structure and cellular functions.
- CO5.** Trained to work independently on any experimental problem relevant to the subject.

#### **CBCSZ-201- CBCSZ-207**

- CO1.** To learn molecular and biochemical principles of cellular functions.
- CO2.** To understand the immunological process of the body in relation to health and diseases.
- CO3.** To understand the cellular expression of various biomolecules
- CO4.** To learn experimentally on various principles of biochemistry, immunology and molecular biology.
- CO5.** Train to work independently on any experimental problem relevant to the subject.

### **CBCSZ-301- CBCSZ-307**

- CO1.** To learn the biology of organismal development, from embryo to adult.
- CO2.** To understand the basic and endocrine physiology in mammalian system.
- CO3.** To learn the reproductive biology of mammals in more detail.
- CO4.** To learn practically the various processes of development and physiology in vertebrates and invertebrates, specifically mammalian system.
- CO5.** To learn experimentally the role of hormones and endocrine system in the development and reproductive behaviour of invertebrate and vertebrate systems.
- CO6.** To understand the cellular and molecular organization of human brain in relation to their functions.
- CO7.** To know, in detail, the molecular methods in gene analysis, the human genome organization and methods in genomic analysis.
- CO8.** To learn about the habitat, physical, and biochemical characteristics of various aquatic ecosystems and the life forms (plants and animals) inhabiting them, including their anatomical structure and physiology.
- CO9.** To train them to work independently on any experimental problem relevant to the subject.

### **CBCSZ-401- CBCSZ-407**

- CO1.** To understand the process of evolution of different animal systems and their taxonomic position in the hierarchy from lower grade to higher grade animals.
- CO2.** To learn the relationship between animals, their surroundings and the coexistence of various life forms in different ecosystems.
- CO3.** To learn about the behavioural aspects of animals, their interaction with each other and the role of environment in the modulation of their social and reproductive behaviour.
- CO4.** To study different kinds of fishes and fisheries of economic importance, fish diseases, fish culture methods and their marketing. In addition, culture and marketing of other aquatic animals of economic importance are to be studied.
- CO5.** To learn the physiology of brain function, neurobehaviour, learning and memory.
- CO6.** To provide the advance knowledge on the basic and molecular genetics of human traits, human diseases, molecular mechanism of development and carcinogenesis.
- CO7.** To understand the physiology of male and female reproductive system including hormonal regulation.
- CO8.** To provide practical training in various methods of culturing fish and other aquatic animals understand brain function, including neurobehaviour and organisation and functions of mammalian reproductive system.

**CO9.** To train to work independently on any experimental problem relevant to the subject.

## **II - M.Phil and Ph.D. Course work programs**

### **Research Methodology**

Students those are pursuing doctoral degree, after successfully finishing the course, will be capable:

- CO1.** To develop innovative ideas related to various fields of chemistry such as nanotechnology, biochemistry and many more.
- CO2.** To having hands-on/operational experience of different sophisticated instruments.
- CO3.** To cultivate technologies, those are more effective and easy to use for society.

### **Review of Literature**

Upon successfully completion of review of literature the student will be able:

- CO1.** To identification of key questions about a topic that need further research and determination of methodologies used in past studies of the same or similar topics.
- CO2.** To develop solid foundation of knowledge in the area and a good feel for the direction any new research should take.

### **Computer Applications**

After successfully finishing the course, the student will be able:

- CO1.** To develop specialized computational skills.
- CO2.** To gain proficiency in working with different software, beneficial for them research studies.

### **Advance course**

After completing the course the student will be able.

- CO1.** To develop a carrier in fish and fisheries including technologies, marketing and management.
- CO2.** To understand the causes of various environmental toxicity, diseases caused by the toxicants and how to manage environmental pollution.
- CO3.** To understand, in detail, the human genome organization, gene mapping, genetics of diseases and methods of studying human genomics.
- CO4.** To understand the organization and functions of human brain, including neurobehaviour, learning and memory.
- CO5.** To build a carrier in wild life conservation, management and education.