



# **DEPARTMENT OF ZOOLOGY**

**GDCR**

**COURSE OUTCOME**

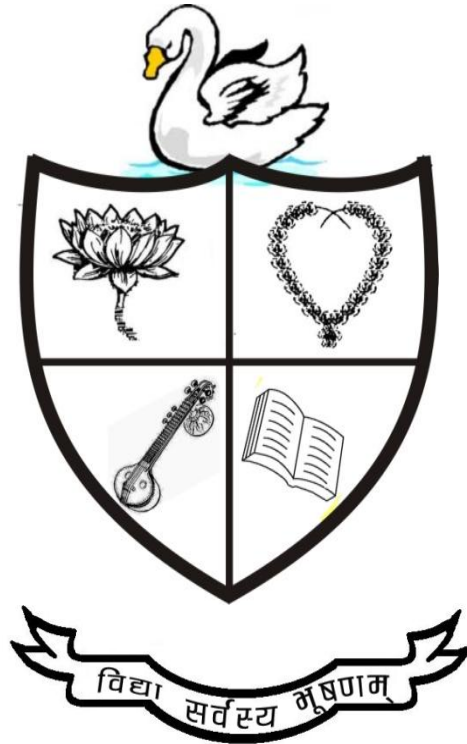
**PROGRAM OUTCOME**

**PROGRAM SPECIFIC OUTCOME**

**2022-23**

**GOVT. DIGVIJAY P.G. AUTONOMOUS COLLEGE  
RAJNANDGAON (C.G.)**

**DEPARTMENT OF ZOOLOGY**



**M.Sc. Zoology Semester Exam (I – IV)**

**Syllabus**

**(2022 – 23)**

**(Approved by Board of Studies)  
Effective from July 2022-23**

## **Program Outcomes**

**Students are capable to understand following facts: -**

- Students aware about Animal Identification.
- Statistical analysis is beneficial for future research project and Research Problems.
- Students are skilled in Design / development of Ecological modeling.
- Uses and handlings of Modern Equipment have and tools.
- Environmental awareness.
- Ethics Individual leadership and team work.
- Project Management.

## COURSES OUT COME

- 1. Biosystematics and Taxonomy:** Students will learn about the basic taxonomy and systematics trends in biosystematics, taxonomic characters and different keys of taxonomy, Procedure keys in Taxonomy and Dimensions of Speciation & Taxonomic character.
- 2. Structure and Function of Invertebrates:** Students will learn about the basic classification of Protozoa, Porifera to Echinodermata groups. They also acquire knowledge about the coelom, nutrition, digestion, excretion, nervous system and larval forms, as well as acoelomate, pseudocoelomate parasites, their life cycles and epidemiology.
- 3. Comparative Anatomy of Vertebrates:** Students will understand the comparative structures of different organ systems such as, integumentary, skeletal, digestive, respiratory, circulatory, Urinogenital, nervous and sensory organs in vertebrates.
- 4. Tools and Technique in Biology:** Students will understand the basic and fundamentals of instrumentation, different types of tools which are used in zoology. Students find practical information of different types of laboratory equipment's, they use different equipment's like pH meter, centrifuge colorimeter, chromatography, electrophoresis, centrifugation, spectrophotometry etc.
- 5. Molecular Cell Biology & Genetics:** Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms. Various molecular tools and techniques like PCR, southern, northern and western blotting, recombinant DNA technology etc., various tools and techniques related to bacterial microbiology. Some aspects of applied microbiology and diseases related to microbiology, some fundamental genetics like Mendelian and Non Mendelian inheritances, linkages, mutations, sex determination of various animals, extra chromosomal inheritances, transposable genetic elements etc.
- 6. General and Comparative Endocrinology:** Students will acquire information about endocrinology with classification of hormones, their biosynthesis, receptors, and mode of molecular actions, physiological function, feedback controls and related disorders. Hormones relation between hormones and animal behavior, basic information of different types of endocrine glands and hormones control animal behavior.
- 7. Environmental Physiology and Ecology:** Students will acquire information about ecological adaptation and physiological adaptation, and stress physiology. Students acquire basic information about the type of changes stress, and also how yoga useful for the body fitness.
- 8. Population Ecology & Quantitative Biology:** Students will acquire information about demography of population, population regulation, biostatistics and ecological modeling, demography & biostatistics. They will also understand the various aspects of biostatistics such as central tendency, t-test, chi-square, ANOVA, correlations and regression.
- 9. Population Genetics and Evolution:** Students will acquire information about concept of evolution, genetics of speciation and molecular evolution. Students finds basic information how molecular evolution affected by genetic variation.
- 10. Animal Behavior:** Students will acquire information about Ethology, communication, orientation and hormonal effect on behavior. Students gain basic information of role of hormones in animal behavior.
- 11. Gamete and Developmental Biology:** Students will learn the different aspects of early, late and post embryonic developments and gamete biology. They gain knowledge about implications of developmental biology in various fields, such as in teratogens, stem cell biology.
- 12. Comparative Physiology of Vertebrates** Students will learn about the fundamental knowledge of comparative physiology of various systems of vertebrates. They will also understand the physiology of muscles, nerves, reproductive systems, sense organs and bone etc.

- 13. Biochemistry:** Students will understand the basic and fundamental biochemistry of carbohydrates, proteins, lipids and nucleic acids. They will also understand the nature, mechanism, and kinetics of enzyme action.
- 14. Limnology:** Students will understand the basic and fundamental of limnological study of fresh water. Students find detail information of water quality management detailed study of plankton. How water quality affected by sewage water study of different physico-chemical parameters.
- 15. Ichthyology:** Students will acquire information of general characters, classification, anatomy and phylogeny of fishes and fish physiology.
- 16. Pisciculture and Economic Importance of Fishes:** Students will acquire information of Pisciculture, World fisheries, Cultivable fisheries and Economic importance of fishes.

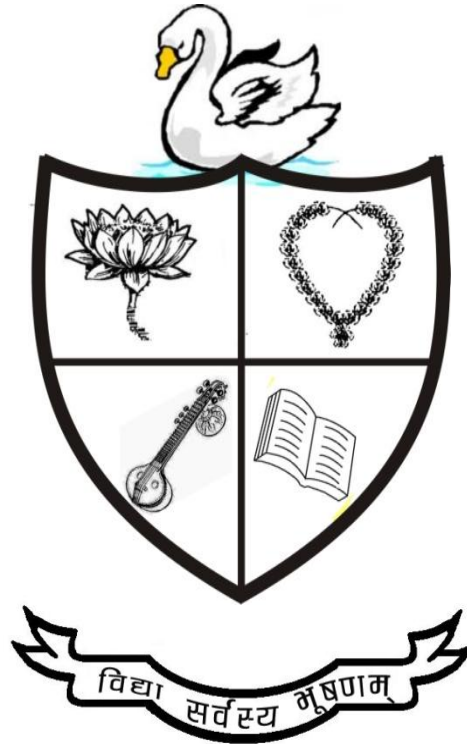
#### **Special Key Points**

Students also make a career in following field after the completion the course

- **Career in life sciences.**
- **Carrier in life science**
- **Fisheries sectors - water analysis, fish culture, fish production, fish capturing and fish marketing.**
- **As a Scientist.**
- **In the field of research, Project writing & Paper publication.**

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**Department of Zoology**

**B.Sc. Zoology**

**2022-23**

**Programme Outcomes**

Specifically, the graduates will be adept in a number of transferable, analytical and communication skills including:

<b>Class</b>	<b>Out Come</b>
SEMESTER: I,II	<ul style="list-style-type: none"><li>➤ The ability to demonstrate sound understanding related to biology, breeding, genetics and nutrition of various cultivable organisms.</li><li>➤ Acquired sufficient skills and knowledge in aquaculture reproduction, hatchery management and applied genetics.</li><li>➤ Gained sufficient knowledge on applying the adaptive management strategies to protect the endemic freshwater and brackishwater fishery resources.</li><li>➤ Ability to diagnose aquaculture related diseases and manage health and safety issues in aquaculture ventures.</li></ul>
SEMESTER: III & IV	<ul style="list-style-type: none"><li>➤ Employ scientific techniques, practical skills and management strategies aimed at improving culture resource management.</li><li>➤ Expertise in handling various instruments and technical aspects related to water/soil quality assessment thus resulting in solving issues in connection with quality management in culture systems.</li><li>➤ Skilled to analyse the quality assessment and post-harvest technology to manage live fish and fishery products.</li><li>➤ Exploit and utilize wisely fisheries resources using appropriate and innovative fishing methods.</li><li>➤ Apply post-harvest practices that are compliant to international standards for food safety and quality.</li></ul>
SEMESTER: V & VI	<ul style="list-style-type: none"><li>➤ Engage effectively in biochemical analyses which are relevant in culture industry.</li><li>➤ Understand and interpret critical scientific and ethical issues related to culture ecosystems and recommend conservatory measures to manage a balanced aquaculture ecosystem.</li><li>➤ Demonstrate research skills and scientific methodologies for further studies, research and employment.</li><li>➤ Gained notes in fields allied to fisheries economics and extension and engage in activities which will result in sustainable production systems and dissemination of knowledge to the society.</li><li>➤ Have a strong hold in the concepts of management &amp; marketing and develop the capacity to produce innovative ideas &amp; tactical skills required for an entrepreneurial career.</li></ul>

## Course Outcome

### **In addition, the students will have the ability to**

- Retrieve and present scientific information, including communicating effectively with a variety of audiences in written and spoken form as well as digital format.
- Understand and apply relevant scientific principles and work effectively, cooperatively and productively within a team.
- critically analyse and evaluate data in fisheries science and creatively solve practical problems. The entrepreneurial skills of the students are enabled through the different training sessions and they will have the capacity to develop, operate and manage a fishery related business through self entrepreneurship. As the course is more processing industry oriented the students will possess the essential skills required to cater the seafood processing sector. Program Specific Outcomes On completion of the B.Sc. Industrial Fish & Fisheries program the students would be skilled in the following specific areas.
- Become adept in the concepts of capture, culture and management of fisheries making oneself suitable employment in both the public and private sector.
- Identify and formulate technically sound, economically feasible and socially relevant fishery related projects.
- In depth knowhow of the fishery products and by-products technology to venture into self entrepreneurship.
- Proficient in various aspects of quality control and quality assurance of seafood products enhancing the employability potential in the seafood industry.
- Apply the principles of economics and marketing along with the attained entrepreneurship skills to own business ventures.