**Name of the Programme**: **M.Sc. Zoology**

**Course Code:** ZOO-526 **Title of the Course:** Ichthyology (Practical)

Number of Credits: 01

**Effective from AY:** 2023-24

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| **Pre-requisites for the Course:** | Comprehensive knowledge of the practical aspect concerning the study of fish anatomy and physiology. | |
| **Course Objectives:** | 1. To develop scientific and biological skills among learners to become knowledgeable about fish.<br>2. To provide hands-on practice on zootomy.<br>3. To illustrate the functional anatomy of teleost<br>4. To inculcate knowledge of histology and embryonic development in fishes. | |
| **Content:** | Study of Goan fish fauna, sampling of finfish and shellfish, quantitative meristic and morphometrics (Using FAO keys)<br>Comparative studies of gills, scales (Determination of age), pharyngeal teeth, and the brain of fishes.<br>Study of feeding habits based on the relative comparison of the gut length of the fishes.<br>Observation of the reproductive system in fish (male and female) and determination of maturity stages in fish.<br>Crude protein analysis of fish muscle by Lowry's method.<br>Histological studies of any two endocrine glands in fish.<br>Study of embryonic developmental stages in fish/crustaceans | 15 x 2 hours |
| **Pedagogy:** | Mini projects/ tutorials/Group discussions/Field visits. | |
| **References/ Readings:** | 1. J.B. Paul, Handbook of Fish Biology and Fisheries, Blackwell Publishing, 2002.<br>2. B.R. Selvamani and R.K. Mahadevan, Freshwater fish farming, Campus Books International, 2009.<br>3. D. Pauly, P. Tyedmers, R. Froese, and L. Y. Liu, Fishing down and farming up the food web. Conservation Biology,2001.<br>4. G. Helfman, B.B. Collette, D.E. Douglas and B.W. Bowen, The Diversity of Fishes: Biology, Evolution, and Ecology. Wiley-Blackwell, 2009.<br>5. M. Barton, Bond's Biology of Fishes, 2008.<br>6. G. Cailliet, A. Ebeling, Fishes, a field and laboratory manual on their structure, identification and natural history, Waveland Press, Ill.1986. | |
| **Course Outcomes:** | The learner will<br>1. Demonstrate the functional anatomy of the organ systems of fish.<br>2. Formulate identification keys for species recognition. | |

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| | 3. Compare the structural, and physiological adaptations shown by different fishes in relation to their environment, including the responses to environmental changes resulting from human activities.<br>4. Analyze the nutritional application of fish.<br>5. Develop practical knowledge of embryonic development in fish. |

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