

Program Outcome

Name of the Department : Department of Zoology

Name of School : School of Life Sciences (SLSc)

The Department runs two Post Graduate courses: 1) M.Sc. Zoology with scopes of Sericulture, Fisheries and Parasitology and General Biology and 2) M.Sc. Life Sciences with special focus on plants, animals, microbes, and molecular biology. The main aim of the programmes is to impart training to students by which they can become self-employable and attain the heights of success in future. In India, Sericulture and Fisheries have been developed as agro-based industries with a vast potential to the rural economy. The department also offers a three years undergraduate programme: Livestock Production and Management. In addition, the Department offers Ph.D. programme in the field of Sericulture, Fisheries, Parasitology, Animal Behaviour and Conservation Biology, Toxicology.

Course Outcomes (CO):

Parasitology:

- a) Learn about parasitology.
- b) Learn the various types of parasites and hosts.
- c) Establish the relationship between a parasite and the host and their effects.
- d) Learn detail the classification and general characteristics of pathogenic/ medically important parasites.
- e) Students can differentiate the parasitic Protozoan, Trematodes Cestodes, and Nematodes.
- f) Learn of the geographic distribution, life cycle, pathogenicity control and treatment of Protozoan, Trematode, Cestode, Nematode parasites.
- g) Learn the basic morphological features of representative chordate systems,
- h) Learn the relationships between morphological features and their functions within representative chordates,
- i) Explain the evolutionary basis of morphological differences and similarities among vertebrate taxa,
- j) Be familiar with new developments in the field of comparative vertebrate anatomy,
- k) Understand ways in which the study of comparative vertebrate anatomy impacts directly and indirectly on human society,

- l) Develop the ability to work collaboratively and use higher level cognitive skills to be able to critically analyze, synthesize, and evaluate diverse sets of information concerning vertebrate anatomy.
- m) The student should be able to examine and determine suitability of specimens for examination.
- n) The student should be able to prepare or preserve specimens for analysis.
- o) The student should be able to determine the presence of and identify the human/animal parasites.
- p) The student should be able to familiarise and apply morphologic criteria to differentiate the most common protozoan and helminth parasites.
- q) The student should be able to improve diagnostic skills by solving basic and advanced diagnostic exercises using microscopy.
- r) The student should be able to get an overview of diagnostic strategies and to apply or adapt these to specific diagnostic questions.
- s) The student should be able to get an overview of alternative methods to microscopy (mainly molecular and immunological methods).
- t) The student should be able to gain experience with diagnostic keys and assistance in choosing appropriate keys (from textbooks or WHO documents) for meeting work-specific objectives

Sericulture:

- a) On completion of the Sericulture course, students will be able to understand overall aspects of Sericulture, namely, Mulberry and non-mulberry silkworms and their food plants, Rearing of the silkworm, Silkworm pathology, Process of silkworm seed production and silk technology.
- b) This course creates awareness among students about the economic importance and suitability of Sericulture in Indian conditions.
- c) Students will learn various technologies involved in Sericulture.
- d) Students will get hands-on training on Mulberry nursery management, Silkworm rearing, and Silk reeling.

Fisheries:

- a) To make students understand the basis of classification of fish based on their characteristic features and to know about the arrangement fresh as well as main fish in India.
- b) To make identify why fish based on their morphological feature such as scales, gills, mouth portion etc.
- c) Acclimatize research atmosphere.
- d) Design own aquarium.
- e) Provide information's on exploited fishery resources and need of their conservation.
- f) Make them aware of fish processing and technology.
- g) Make students aware of fish processing and technology.

- h) Fish market survey, fish identification tools.
- i) Give first sight to self design and management of fish farm. Practical knowledge of fish breeding and development.
- j) Introduction of integrated fish farming to support income growth.
- k) Fish breeding and toxicology experimentation.
- l) Fish Market waste management in the extra earning form.
- m) Enable the students to handle any fish by their own and locate some of the vital organs of fish. Furthermore, what sustainable approach could be taken to tackle the demerits of intensive fish farming
- n) Students also had exposure, participation and their best contribution in National Conference in Research Development in Fisheries (NCRDF-2019).
- o) Understand fish breeding and toxicology.

General Biology, Taxonomy, Animal Behaviour, Wildlife and Conservation Biology:

- a) Establishment of relationships among the species based on various taxonomical procedures.
- b) Identification and documentation of the species diversity.
- c) Classifying organisms into taxa on the basis of similarities in phenotypic characteristics.
- d) Biodiversity assessment using various indices.
- e) Understanding on reproductive isolation and speciation.
- f) Behavioural ecology enables the students to understand proximate and ultimate causes of behaviour.
- g) The behavioural ecology offers opportunity to understand foraging decisions, optimal foraging behaviour, mating behaviour, habitat selection, migration, communication and evolutionary mechanisms.
- h) Behavioural ecology bridges disciplines of behaviour, ecology, genetics, and evolution.
- i) Animal behaviour has a great practical importance in Biodiversity assessment and Conservation.
- j) The study of behaviour addresses issues related to the origin and mechanisms of human thought and cognition.
- k) Motivation and causation of behaviours, including human behaviours can be understood.
- l) The study of Animal behaviour will facilitate the management of wildlife.
- m) Animal behaviour is useful for identification and documentation of species diversity.

- n) Wildlife wealth of India and various management practices of Indian wildlife as well as Sustainable utilization of wild species.
- o) The programme equips the students to eligible for wildlife managers and related positions in Zoological Survey of India.
- p) Studies on wildlife offer thorough knowledge on endemism, biodiversity hotspots, National Parks, Sanctuaries, biosphere reserves, and threatened wildlife of India.
- q) The study can be used to assess minimum viable populations of critical, endangered, vulnerable and rare species of Indian wildlife.
- r) The course offers knowledge on wildlife trade in India as well as in global market, and role of National and International organizations on controlling wildlife trade.
- s) Students learn the existing legal provisions in wildlife conservation and sustainable utilizations.

Life Sciences:

- a) Introduce the chemical aspects of living cells by discussing the atoms, molecules, salts, and their chemical interactions. Solutions, biological buffers and their implications in living cells.
- b) Hand on experience of various techniques involved in laboratory practical
- c) Give an idea about biomolecules and their interactions and biological importance
- d) Introduce practical training to students by performing various experiments.
- e) Introduce protein chemistry, enzyme chemistry their clinical significance
- f) Introduce practical training to students to identify carbohydrate in given sample.
- g) to introduce enzyme chemistry their clinical significance, bio molecules and their metabolism
- h) Introduce practical training to students by performing various experiments.
- i) To give an idea of plant tissue culture , To introduce the concepts of plant growth regulators , its physiological role and mode of action in plants
- j) Students learnt the basics of plant tissue culture, physiological role and mode of action of PGR auxin at molecular level.
- k) One of the important aims of this course is to Study the Genetic control of cell growth, Differentiation, and Morphogenesis which is the process that gives rise to Tissues, Organs and their anatomical aspects.

- l) One of the important aims of this course is to acquire knowledge of the advancement in subject and will benefit in biotechnological and molecular work in research.
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- n) The students would be aware of immune system cells and tissues.
- o) The students would have knowledge on immunological /clinical tests.
- p) The students would be able to isolate lymphocytes and monocytes.
- q) The students would be able to identify various immune system cells.

B.Voc. Livestock Production and Management:

The B.Voc. Course running in the department is in itself skill based academic entrepreneurship which helps in building our nation strong. The basic concept of the course is to instigate the students about how to earn while you learn. Hence, for proper understanding and running of the course in academics, it will require organization and conduction of several orientation programs invoking the technical, agricultural and applied skills of students. The program should also enhance the societal benefits of different skills which help in the sustainable development of natural resources. Another aspect of this vocational course is the system of several start-ups that will judiciously utilize the hidden treasures of diverse and existing life forms.

Since, this course sees maximum use of practical knowledge, therefore hands-on training is must from time to time that will provide an adequate exposure to the students.

Programme Outcome (PO):

These areas generate employment opportunities as given below:

1. Direct employment through mulberry cultivation, silkworm rearing and cocoon production; and indirect employment through reeling of cocoon, twisting, warping, dying and weaving.
2. Generation of employment and revenue through inland fish culture.
3. Animal behaviour offers employment opportunity as Zoo Keepers, Managers, Scientists and animal conservationists.
4. B.Voc. Livestock Production and Management offers employment opportunity as well as skill based academic entrepreneurs.

Programme Specific Outcome (PSO):

The programme offers employment opportunity as Zoo Keepers, Managers, Scientists, Technical Officers, Wildlife managers, Scientists in Zoological Survey of India & other government bodies, Taxonomists, curators, entrepreneurs and Researchers.