

Syllabus

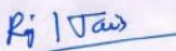
UG0802 -ZOO-63T-201- Economic Zoology & Ethology

UG0802 -ZOO-63P-202- Practicals based on Economic Zoology & Ethology

III SEMESTER -Zoology

| Semester | Code of the Course | Title of the Course/Paper | | | NHEQF Level | Credits |
|--|----------------------------|---|-----------|-------|-----------------------|---|
| III | ZOO-63T-201 ZOO-63P-202 | Economic Zoology & Ethology Practicals based on Economic Zoology & Ethology | | | 6 | 4 |
| Level of Course | Type of the Course | Credit Distribution | | | Offered to NC Student | Course Delivery Method |
| | | Theory | Practical | Total | | |
| 6 | Major | 4 | 2 | 6 | Yes | Lectures: 60 lectures including diagnostic and informative assessments during lecture hours and 30 Hours of Practical training/demonstration. |
| List of Programme Codes in which Offered as Minor Discipline | | B.Sc. Chemistry: UG0804 B.Sc. Botany: UG0805 | | | | |
| Prerequisites | | B. Sc (Bio Group) II SEM | | | | |
| Objectives of the Course: | | <ul style="list-style-type: none"> Gain knowledge about silkworms rearing and their products; Bee keeping equipment and apiary management. Acquaint knowledge on dairy animal management, the breeds, and diseases of cattle and learn the testing milk quality. Acquaint knowledge about the culture techniques of fish, prawn and poultry. Acquaint the knowledge about basic procedure and | | | | |

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| | <p>methodology of Vermiculture. Learn various concepts of lac cultivation.</p> <ul style="list-style-type: none"> ● Learn the various pests and diseases and their management strategies ● Students can start their own business i.e. self-employments. and Get employment in different applied sectors ● To equip learners with a sound knowledge of how animals interact with one another and their environment. ● To enable the learners to understand different behavioral patterns. |
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Detailed Syllabus

ZOO-63T-201: Economic Zoology & Ethology

UNIT I

Sericulture: Silkworm species, host plants, types of silk, economic importance of silk, Moriculture: life cycle of mulberry silkworm, silk production, processing of silk, associated enemies, diseases and their management. **4 Hrs**

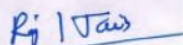
Lac culture: Life cycle of lac insect, general practices and management of lac cultivation, processing of lac, composition, properties and products of lac, associated enemies, diseases and their management. **4 Hrs**

Apiculture: Species of domesticated honey bee, life cycle of honeybees, indigenous and artificial bee hives, management of beekeeping, by-products, associated enemies, diseases and their management, apiculture and apiary in India. **4 Hrs**

Prawn culture: Culturable species, prawn hatcheries, culture practices, products and maintenance of culture, associated diseases and their management. **3 Hrs**

UNIT II

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Vermiculture and Vermicomposting: Suitable and non-suitable species, conventional and commercial vermiculture (small- and large-scale vermicomposting), harvesting, processing, problems related to vermicomposting **4 Hrs**

Pearl culture and industry: Pearl producing molluscs, pearl formation, harvesting, properties and composition of pearls. **3 Hrs**

Pisciculture: Culturable species, edible fishes, seed production, hatcheries, feeding of fishes, by-products of fish culture, associated diseases and their management.

4 Hrs

Poultry keeping: Indigenous and exotic breeds of poultry, housing system of poultry, common poultry management practices, associated diseases and their management.

4 Hrs

UNIT III

Protozoan diseases: Malaria, African sleeping sickness, amoebic dysentery, Leishmaniasis **3 Hrs**

Helminth diseases: Outline of diseases caused by Platyhelminthes and Aschelminthes **3 Hrs**

Arthropod-borne diseases: Tick-borne diseases, Mite infestation, Insect-borne diseases. **4 Hrs**

Pest and their management: agricultural pests, stored grain pests, household pests, Integrated pest management **5 Hrs**

UNIT IV

Ethology: Introduction and history of Ethology Brain and behaviour, Limbic system and Hypothalamus. **3 Hrs**

Concepts of ethology: Fixed action pattern, sign stimulus, innate releasing mechanism, action specific energy, motivation, imprinting and learning.

4 Hrs

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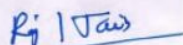
Communication: auditory, tactile, visual and chemical; Societies: Characteristics and advantage with special reference to honey bee and monkeys. **4 Hrs**

Biological clocks and animal behaviour: Biological rhythms and biological clocks. Methods of studying animal behaviour. **4 Hrs**

Suggested Books and References:

1. Economic Zoology, Biostatistics and Animal behaviour, S. Mathur, 2009, Deep and Deep Publicatons.
2. Economic Zoology, Shukla G.S. & Upadhyay V.B., 2017, Rastogi Publications.
3. Vermicomposting for sustainable agriculture, Gupta P. K, 2003, Agrobios India
4. A hand book of economic zoology, Ashan J. and Sinha S.P, 2010, S. Chand and Company
5. Perspectives in Indian Apiculture, Mishra R. C., 1999, Allied scientific publ. Bikaner India
6. A Textbook of Applied Entomology, Srivastava, K. P., 1988., Publ. Kalyani Publishers, New Delhi.
7. Animal Behavior: An Evolutionary Approach, Alcock J., 2013, Sinauer Associates.
8. Animal Societies and Evolution: Reading from Scientific America, 1981, Tophoff H.R., W.H. Freedman and Co Ltd.
9. Animal Behavior, Breed M.D. and Moore J., 2015, Academic Press.
10. Animal Behavior, Mathur R, 2010, Rastogi Publications.
11. The ecology & Evolution of Animal Behavior, Werlace R.A., 1979, Good Year Publishing Co., Inc.
12. Biological Rhythms, Kumar V., 2002, Narosa Publishing House, Delhi/ Springer-Verlag.

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Suggested E-Resources:

1. <https://vidyamitra.inflibnet.ac.in/content/index/6018e55f8007bec1c22166b0/ET>
2. <https://vidyamitra.inflibnet.ac.in/content/index/6018e69d8007be8bc42166af/ET>
3. <https://vidyamitra.inflibnet.ac.in/index.php/content/index/5fd9f1678007bef4453de567>
4. <https://vidyamitra.inflibnet.ac.in/index.php/content/index/6018dbb48007be63c12166ae>

Course Learning Outcome: Upon completion of the course, students will be able to:

- Understand the economic importance of non-chordates and chordates and their significance in the ecosystem.
- Comprehend the life cycle of specific parasites, the symptoms of the disease and its treatment and apply simple preventive measures for the same.
- Gain knowledge on animals useful to mankind and the means to make the most of it.
- Learn the modern techniques in various industries of beneficial animals.
- Pursuing entrepreneurship as careers
- Understand the main historical ideas that underpin animal behaviour theory.
- Critically review hypotheses to explain animal behaviour.
- Gain an insight into different types of animal behaviour and their role in biological adaptations.

Practical Syllabus**UG0802 -ZOO-63P-202- Practicals based on Economic Zoology & Ethology**

1. Study of Microscopic Slides/models/ photographs of the following: *Plasmodium*, *Giardia*, *Toxoplasma*, *Trypanosoma*, Bedbugs, mosquito (any), *Pediculus humanus capitis*, *Xenopsyllacheopsis*, aphid, *Tribolium*, *Tenia solium*, *Fasciola hepatica*, *Ascaris*, *Waucheria*,
2. Study of Museum Specimens/ photographs/ Models of following: silk moth species, earthworm species, Prawn, Pearl oyster, poisonous spiders, scorpion, ants,

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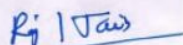
Centipede, ear wig, types of honey bees, cockroach, crickets, grasshopper, edible fishes, fur, feathers, corals, cowrie.

3. To study life cycle of silk worm and different types of silk yarns available in the market.
4. To study the qualitative analysis of honey.
5. To study the construction of vermicomposting bins and devices used for vermicomposting.
6. Study to differentiate between original and artificial pearls.
7. To study the food preference and response to light in any of the stored insect pest
8. To study the antennal grooming in cockroach.
9. Study of chemical communication behaviour in Ants/earthworm.
10. Educational tour: Visit to any sericulture research and training Institute/ Apiary/ Poultry farm/ Aquaculture and report submission (Candidates are expected to submit a detailed report of such visit)

Scheme of Practical Examination and Distribution of Marks

| S.No. | Practical Exercises | Regular Students | Ex. /N.C. Students |
|-------|---|------------------|--------------------|
| 1. | Exercise based on sericulture, apiculture, lac culture. | 6 | 12 |
| 2. | Exercise based on vermiculture, pearl culture, aquaculture. | 4 | 6 |
| 3. | Exercise based on ethology | 4 | 6 |
| 4. | Identification and comments on Spots (1 to 8) | 16 | 16 |
| 5. | Viva Voce | 5 | 10 |
| 6. | Class Record and report | 5 | |

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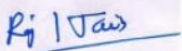

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| | | 10*+40=50 | 50 |
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Note:***Internal marks for regular students only.**

1. With reference to microscopic slides, in case of non-availability, the exercise should be substituted with diagrams / photographs.
2. Candidates must keep a record of all work done in the practical class and submit the same for inspection at the time of the practical examination.
3. It should be ensured that animals used in the practical exercises are not covered under the wild life act 1972 and amendments made subsequently.

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