DISCIPLINE SPECIFIC ELECTIVE COURSE 22
Faunal Conservation and Restoration
Zoo-DSE-22

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Faunal Conservation and Restoration **Zoo-DSE-22**	**4**	**3**	**0**	**1**	**As per the Program Eligibility**	**Studied Biology at 10+2**

Learning Objectives

The Learning Objectives of this course are as follows:

- To understand the faunal diversity in context to the Indian sub-continent, and recognise it as an integral part of global ecosystem.
- To understand theoretical concepts, ethical principles and legal frameworks governing animal conservation.
- To expose students to the various threats to biodiversity.
- To identify contemporary issues related to wildlife conservation such as habitat loss, poaching, climate change, or biodiversity decline.
- To have an in-depth exploration of different strategies used in faunal conservation, such as protected areas, captive breeding, rewilding, or community-based conservation.

Learning Outcomes

After studying this course, learner can:

- Understand the ethical, historical, and cross-cultural context of environmental issues related to fauna.
- Provide novel perspectives or solutions to conserve faunal species.
- Provide proposals for future research, policy changes, or conservation laws.

Syllabus

THEORY **45 hrs**

UNIT 1: Fundamentals and Value of biodiversity **8 hrs**

Species diversity, genetic diversity and ecosystem diversity. Faunal biodiversity hotspots of India: Himalayan region, western ghats and north-eastern region. Sentinel species/ environmental guardians. Ecological economics, Ethical values, Evaluating development projects (any project of India).

UNIT 2: Threats to biodiversity **14 hrs**

Pollution Ecology: Air, water, soil and radioactive. Emerging contaminants. Habitat destruction, fragmentation and degradation; Overexploitation. Global climate change, acid rain; Invasion Ecology; Ecotoxicology. Wildlife forensics- forensic protocols for species identification from different parts of reptiles, birds and mammals; wildlife crime case studies.

UNIT 3: Conservation and Restoration **15 hrs**

Sustainable utilization of natural resources; Bioprospecting; People biodiversity register; Role of indigenous knowledge system; Ecological footprinting; Protected areas; Policies and laws; Environmental impact assessment; GIS and remote sensing. Restoration: Factors involved in implementing ecological restoration: Restoration of major communities; Bioremediation.

UNIT 4: Social issues and environment **8 hrs**

Global issues and sustainable development; Biodiversity crisis: how biodiversity is interconnected with ecosystem processes, and it's decline with emphasis on impact on human health. Release of GMOs in the environment.

PRACTICALS **30 hrs**

(Laboratory periods: 15 classes of 2 hours each)

1. To study pollutants: phosphate, nitrates, sulphates in the water sample (control and polluted)
2. To analyze and compare phosphorus, nitrogen, organic matter, particle size of the soil samples.
3. To perform toxicological bioassay tests: LC50/ EC50 on organisms such as zooplankton, stored grain pests etc.
4. Study any eight endangered animal species of India with focus on their conservation efforts
5. To study principle of Global Positioning System (GPS) and Geographic Information System (GIS)

PROJECT WORK

Project Report on hypothesizing and designing experiment based on field or laboratory visit

Essential/Recommended Readings:

1. Richard, B. Primack, Essentials of Conservation Biology. (6th edition), Sinauer Associates.
2. Gabriel, M. Biodiversity and Conservation, Oxford and IBH Publishing.
3. Sharma, P.D., Ecology and Environment, Rastogi Publications.
4. Nair, S.M. Endangered Animals of India and their Conservation, National Book Trust of India.
5. Joseph, B., Environmental studies, Tata Mc Graw Hill.
6. Ghosh, S.K., Singh, R. 2003. Social Forestry and Forest Management. Global Vision Pub.
7. Sinha, S. 2010. Handbook on Wildlife Law Enforcement in India. TRAFFIC, India.

Suggested Readings:

1. Mohapatra Textbook of Environmental Biotechnology, IK Publication.
2. Thakur, I. S., Environmental Biotechnology, IK Publication.
3. Divan Rosencraz, Environmental Laws and Policies in India, Oxford Publication.
4. Allabay, M., Basics of Environmental Science, Routledge Press.
5. Rana SVS, Environmental pollution – Health and Toxicology, Narosa Publication.
6. Miller, G.T. 2002. Sustaining the Earth, an Integrated Approach. (5th edition) Books/Cole, Thompson Learning, Inc.
7. Chapman, J.L., Reiss, M.J. 1999. Ecology: Principles and Applications (2nd edition) Cambridge University Press.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.