

DISCIPLINE SPECIFIC ELECTIVES (DSE) COURSES

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DEPARTMENT OF

ZOOLOGY

Discipline Specific Electives (DSEs)

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SYLLABUS

DISCIPLINE SPECIFIC ELECTIVES (DSE-4): Wildlife Conservation & Management Zoo-DSE-4

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	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Wildlife Conservation & Management Zoo-DSE- 4	04	03	Nil	01	Appeared in Sem II	NIL	Zoology

Learning Objectives

The learning objectives of this course are as follows:

- To acquaint the students with varied aspects of wildlife conservation, including its importance, major threats, and management of their habitats and populations.
- The emphasis will be on developing interest and invoking a sense of responsibility among students towards wildlife conservation.
- The course also explores different techniques, perspectives, and approaches to both identify and achieve wildlife management goals.
- To motivate students to pursue a career in the field of wildlife conservation and management.

Learning Outcomes

By studying this course, students will be able to:

- Appreciate wildlife in general and realize its conservation and management in particular.
- Comprehend the application of the principles of ecology and animal behaviour to formulate strategies for the management of wildlife populations and their habitats.
- Understand the management practices required to achieve a healthy ecosystem for wildlife population along with emphasis on conservation and restoration.
- Know the key factors for loss of wildlife and important strategies for their in situ and ex situ conservation.
- Recognize the techniques for estimation, remote sensing and Global Position Tracking for wildlife.
- Gain knowledge about the wildlife diseases and the quarantine policies.
- Know about the Protected Area Networks and Ecotourism in India

- Perform critical thinking, literature review; scientific writing as well as presentations; and participation in citizen science initiatives with reference to wildlife.

SYLLABUS OF DSE- 4

UNIT- 1: Introduction to Wildlife (3 hrs)

Values of wildlife - positive and negative; Conservation ethics; Importance of conservation; Causes of depletion.

UNIT- 2: Evaluation and Management of Wildlife (9 hrs)

Habitat analysis: a) Physical parameters: Topography, Geology, Soil and water; b) Biological Parameters: food, cover, forage; Standard evaluation procedures: Bio-telemetry, Remote sensing and GIS.

UNIT- 3: Management of Habitats (9 hrs)

Setting back succession: Grazing, prescribed fire, mechanical treatment and selective herbicide application; Advancing the successional process and cover construction; Preservation of genetic diversity; Restoration of degraded habitats.

UNIT- 4: Population Estimation (6 hrs)

Faecal analysis of ungulates and carnivores: Faecal samples, slide preparation and hair identification; Pug marks and census methods.

UNIT- 5: Wildlife Health and Rehabilitation (9 hrs)

Care of injured and diseased animal; Quarantine; Common diseases of wild animals: Zoonosis (*Ebola* and *Salmonella*), Rabies, Foot and Mouth Disease, *Mycobacterium* TB, Bovine and Avian Flu (Any 3 in detail).

UNIT- 6: Protected Areas and their management (9 hrs)

National parks and Sanctuaries; Biosphere reserves; Conservation and Community reserve; Important features of Protected Areas in India; Project Tiger- conservation and management challenges in Tiger reserves; Human-wildlife conflict; Eco-tourism.

Practical (30 hrs)

(Laboratory periods: 15 classes of 2 hours each)

1. Demonstration of basic equipment needed in wildlife studies- use, care and maintenance (Compass, Binoculars, Spotting scope, Range Finders, Global Positioning System, Various types of Cameras and lenses).
2. Familiarization and study of animal evidences in the field: Identification of animals through pug marks, hoof marks and scats.

3. Trail/ transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences).
4. Identification of Big cats: Lion, Tiger, Cheetah, Leopard and Jaguar.
5. Project Report: Identification of mammalian fauna, avian fauna, herpeto-fauna through direct and indirect evidences seen on a field trip to a National Park/Wildlife

Essential/recommended readings:

1. Hudson, P.J., Rizzoli, A., Grenfell, B.T. Heestrbeek, H. and Dobson, A.P. (2002) The Ecology of Wildlife Diseases. Oxford University Press, Oxford.
2. Banerjee, K. (2002) Biodiversity Conservation in Managed and Protected Areas. Agrobios, India.
3. Kenneth Anderson (2000) The Kenneth Anderson Omnibus Vol I. Rupa Publications.
4. Jim Corbett. (2017) Man Eaters of Kumaon. Om Books International.
5. Saha, G.K. and Mazumdar, S. (2017) Wildlife Biology: An Indian Perspective. PHIlearning Pvt. Ltd. ISBN: 8120353137, 978-812035313.
6. Sinclair, A.R.E., Fryxell, J.M. and Caughley, G. (2006) Wildlife Ecology, Conservation and Management. Wiley-Blackwell, Oxford, UK.
7. Singh, S.K. (2005) Text Book of Wildlife Management. IBDC, Lucknow.

Suggested readings:

1. Primack, R.B. (1998). Essentials of Conservation Biology. Sinauer Associates, Inc. Sunderland, MA.
2. Hossetti, B. B. (1997). Concepts in Wildlife Management. Daya Publishing House, Delhi.
3. Sharma, B.D. (1999) Indian Wildlife Resources Ecology and Development. Daya Publishing House, Delhi.

DISCIPLINE SPECIFIC ELECTIVES (DSE-8): Parasitology (Zoo-DSE-8)

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	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
Parasitology (Zoo-DSE-8)	04	03	Nil	01	Passed Class XII with Biology/Biotechnology	Basic understanding of parasitic animals	Zoology

Learning Objectives

The learning objectives of this course are as follows:

- To enable the students to see, appreciate and understand the diversity of parasites
- to learn about Parasitology that will enable students to diagnose parasites correctly, understand their life cycle and control them effectively and use some of them as bio control agents
- to acquire understanding of study of life cycles of parasites, that can help in defying the stigmas and religious taboos for many societies making free many of the people from superstition and ill health.
- to make the students aware about the possible scope of the subject which includes research and applied aspects including entrepreneurial skill

Learning Outcomes

By studying this course, students will be able to:

- better understand the variation amongst parasites, parasitic invasion in animals; applicable to medical and agriculture aspects
- Identify the stages of the life cycles of parasites and their respective infective stages. develop ecological model, on the base knowledge of population dynamics of parasites.
- comprehend the different methods adopted by parasites to combat with the host immune system.
- develop skills and realize significance of diagnosis of parasitic attack and treatment of patient or host.

- analyse and interpret the case studies to highlight innovative researches, serendipities towards the advancement and enrichment of knowledge in the field of Parasitology.

SYLLABUS OF DSE- 8

UNIT- 1: Introduction to Parasitology **3 hrs**

Brief introduction of Parasitism, Parasite, Parasitoid and Vectors; Host parasite relationship

UNIT- 2: Parasitic Protists **10 hrs**

Study of Morphology, Life Cycle, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Entamoeba histolytica*, *Trypanosoma gambiense* and *Plasmodium vivax*.

UNIT- 3: Parasitic Platyhelminthes **10 hrs**

Study of Morphology, Life Cycle, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Fasciolopsis buski*, *Schistosoma haematobium* and *Taenia solium*

UNIT- 4: Parasitic Nematodes **10 hrs**

Study of Morphology, Life Cycle, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Ascaris lumbricoides*, *Ancylostoma duodenale*, *Wuchereria bancrofti* and *Trichinella spiralis*.

UNIT- 5: Parasitic Arthropoda **8 hrs**

Biology, importance and control of ticks, mites, *Pediculus humanus* (Head and Body louse), *Xenopsylla cheopis* and *Cimex lectularius*

UNIT- 6: Parasitic Vertebrates **4 hrs**

A brief account of parasitic vertebrates; Cookicutter Shark, Hood Mockingbird and Vampire bat.

Practical **(30 hrs)**

(Laboratory periods: 15 classes of 2 hours each)

1. Study of life stages of *Entamoeba histolytica*, *Trypanosoma gambiense*, and *Plasmodium vivax* through permanent slides/micro photographs.
2. Study of adult and life stages of *Fasciolopsis buski*, *Schistosoma haematobium* and *Taenia solium* through permanent slides/microphotographs.
3. Study of adult and life stages of *Ascaris lumbricoides*, *Ancylostoma duodenale* and *Wuchereria bancrofti* through permanent slides/microphotographs.
4. Study of *Pediculus humanus* and *Xenopsylla cheopis* and *Cimex lectularius* through permanent slides/ photographs.

5. Study of monogenea from the gills of fresh/marine fish [Gills can be procured from fish market as by-product of the industry]
6. Submission of a brief report on parasites (anyone phylum).
7. Visit to rural area/hospital near rural area/NCDC/NIMR/NICD to study the natural history and diagnostics of parasites.

Essential/recommended readings:

1. Parija, S. C. (2013) Textbook of Medical Parasitology, Protozoology & Helminthology (Text and colour Atlas), IV Edition, All India Publishers & Distributors, New Delhi.
2. Ichhpujani, R.L. and Bhatia, R. (2009) Medical Parasitology. III Edition, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi
3. Ahmed, N., Dawson, M., Smith, C. and Wood, Ed. (2007) Biology of Disease. Taylor and Francis Group.

Suggested readings:

1. Chatterjee, K. D. (2009). Parasitology: Protozoology and Helminthology. XIII Edition, CBS Publishers & Distributors (P) Ltd.
2. Arora, D. R and Arora, B. (2001) Medical Parasitology. II Edition. CBS Publications and Distributors
3. Noble, E.R. and Noble, G.A. (1989) Parasitology: The Biology of Animal Parasites. VI Edition, Lea and Febiger

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