Department of Zoology

Lesson Plan

Semester: -6th (Major/Minor) **Batch: (NEP batch 2022)**

ZOL622N ZOOLOGY – ANIMAL BEHAVIOUR CREDITS: 03 (THEORY)

Name of the Teacher:-Dr. Urmilla John

COURSE OBJECTIVE:

To develop a deeper understanding of how animals, interact with each other and their environment.

LEARNING OUTCOME:

The learner will understand the behaviour of different animal groups, their communication systems, and social structure. The knowledge will be utilized to promote animal conservation and improve their management.

Unit	No. Of Lectures	Topic
UNIT 1	4	Home range, territoriality, dispersal & habitat selection
-do-	3	Food selection and optimal foraging theory
-do-	4	Genetic and environmental components in the development of behaviour
-do-	3	Neural basis of behaviour: stimulus filtering & biological rhythms
UNIT 2	3	Social organization in insects
-do-	2	Social behaviour in primates
-do-	2	Parental care in vertebrates
-do-	4	Communication in animals: auditory, visual, chemical and tactile
UNIT 3	3	Courtship and mating systems

-do-	4	Tumor immunology: immune surveillance, tumor associated antigens & tumor escape mechanisms
-do-	3	Tumor immunotherapy: antigen non-specific & antigen specific
UNIT 4	3	Concept & classification of hypersensitivity reactions with brief descriptions
-do-	3	Mechanism of type I and type II hypersensitivity reactions
-do-	2	Introduction to autoimmune (AI) diseases with emphasis on AI anaemias & rheumatoid arthritis
-do-	3	Transplantation immunology: types of grafts; mechanism of homograft rejection

Resource and Material

1. **Power Point Presentations**
2. **Hardcover Books and E-books**
3. **Internet**
4. **White Board Markers**
5. **Charts**
6. **Projector**

Teacher Incharge

Head of the Department

Department of Zoology

Lesson Plan

Semester: -4th (Major) **Batch: (NEP batch 2023)**

ZOL422J3: ZOOLOGY – FUNDAMENTALS OF PARASITOLOGY Credits: 4 (Theory)

Name of the Teacher:-Dr. Muddasir Basheer

Learning Objective:

To understand the nature of the parasites and parasitism. To acquaint the students with the knowledge of parasites of medical, veterinary & agricultural importance.

Learning Outcome:

The learner becomes aware of the parasitic diseases and the consequences thereof, and understands their mode of transmission, pathogenicity, control, and management.

Unit	No. Of Lectures	Topic
UNIT 1	3	Animal associations with special emphasis on parasitism; terms & definitions in parasitology
-do-	2	Origin, evolution and distribution of parasites in animal kingdom; parasitic adaptations
-do-	2	Host parasite relationships
-do-	2	Zoonosis: definitions & types
UNIT 2	3	Protozoan parasites of man with emphasis on Entamoeba & Plasmodium
-do-	3	Trematode parasites of man with emphasis on Schistosoma & Paragonimus
-do-	3	Cestode parasites of man with emphasis on Taenia & Diphyllobothrium
-do-	3	Nematode parasites of man with emphasis on Ascaris & Ancylostoma
UNIT 3	3	Protozoan parasites of poultry & cattle (Babesia)
-do-	3	Trematode parasites of fish (Diplozoon) & ruminants (Fasciola)
-do-	3	Cestode parasites of fish (Adenoscolex) & ruminants (Moniezia)

-do-	3	Nematode parasites of fish & aves (Heterakis) & ruminants (Haemonchus)
UNIT 4	3	Introduction to phytonematodes with emphasis on their ecology & biology
-do-	2	Morphology, life cycle, pathogenicity and management of Meloidogyne
-do-	2	General account and distinguished features of acanthocephalans
-do-	2	Acanthocephalan parasites of fish (Pomphorhynchus)

Resource and Material

1. **Power Point Presentations**
2. **Hardcover Books and E-books**
3. **Internet**
4. **White Board Markers**
5. **Charts**
6. **Projector**

Teacher Incharge

Head of the Department

Department of Zoology

Lesson Plan

Semester: -6th (Major course) **Batch: (NEP batch 2022)**

Name of the course: ZOL622J3 ZOOLOGY–FUNDAMENTALS OF ICHTHYOLOGY

Name of Teacher: Dr Muddasir Basheer CREDITS: 04 (THEORY)

COURSE OBJECTIVE:

To impart knowledge about the classification and evolution of fishes, modification of various body structures, knowledge about the structure and function of various organs.

LEARNING OUTCOME:

Students will benefit from the course's in-depth coverage of the taxonomy of the major fish groups, as well as their evolutionary history, morphology, physiology and anatomy. In particular, the students will learn about the taxonomy and identification of fish, with a focus on local freshwater fish. They will also gain knowledge about the anatomy and physiology of fish.

Unit	No. Of Lectures	Topic
UNIT 1	3	Outline classification of fishes with distinguishing characters up to orders
-do-	3	Adaptive radiation in Elasmobranchii and Actinopterygii
-do-	3	Structure, types and modification of scales and fins
-do-	2	Colouration in fishes
UNIT 2	4	Digestive system and physiology of digestion
-do-	5	Structure and function of gills; Accessory respiratory organs; Swim bladder
-do-	3	Structure and function of heart and blood vessels
-do-	3	Structure and function of kidneys (Excretion and Osmoregulation)

UNIT 3	3	Reproductive organs in fishes (Teleost)
-do-	3	Structure and function of the nervous system (Teleost)
-do-	4	Sense organs and their function
-do-	3	Structure and function of endocrine organs
UNIT 4	4	Endoskeleton in fishes: Axial Skeleton (Typical trunk vertebrae and caudal vertebrae); Appendicular skeleton (girdles)
-do-	2	Structure and significance of Weberian ossicles
-do-	2	Musculature in fishes
-do-	3	Locomotion in fishes

Resource and Material

1. **Power Point Presentations**
2. **Hardcover Books and E-books**
3. **Internet**
4. **White Board Markers**
5. **Charts**
6. **Projector**

Teacher Incharge

Head of the Department

Department of Zoology

Lesson Plan

Semester: -2nd (Major/Minor) **Batch: (NEP batch 2024)**

ZOL222J ZOOLOGY (INTRODUCTION TO CHORDATES) CREDITS: THEORY: 4

Name of the Teacher:-Dr. Wajid Majeed Khanday

COURSE OBJECTIVE:

This course is designed to give a learner the fundamental understanding of the diversity of the phylum chordata with emphasis on their origin, key characteristics, classification, distribution and functioning.

LEARNING OUTCOME:

After the completion of this course, a student will be able to:

Demonstrate the identification and classification of chordates

Comprehend and explain evolutionary relationships among the various chordate groups

Understand the ecological distribution and evolutionary divergence of chordates

Unit	No. Of Lectures	Topic
UNIT 1	6	Origin & evolution of chordates
-do-	1	General characters of chordates
-do-	2	Outline classification of the phylum Chordata
-do-	6	Distribution of vertebrates in different Zoogeographical realms
UNIT 2	3	General characters and classification of protochordates up to order level
-do-	2	Retrogressive metamorphosis in urochordates
-do-	4	General characters and classification of Pisces up to order level
-do-	2	Migration and osmoregulation in fishes
UNIT 3	3	General characters and classification of amphibians up to order level

-do-	3	Parental care in amphibians
-do-	5	General characters and classification of reptiles up to order level
-do-	3	General features of poisonous and non-poisonous snakes
UNIT 4	3	General characters and classification of aves up to order level
UNIT 4	2	Flight adaptations in birds
-do-	2	General characters and classification of mammals up to order level
-do-	3	Adaptive radiation in mammals with reference to locomotory organs

Resource and Material

1. **Power Point Presentations**
2. **Hardcover Books and E-books**
3. **Internet**
4. **White Board Markers**
5. **Charts**
6. **Projector**

Teacher Incharge

W Majid

Head of the Department

Department of Zoology

Lesson Plan

Semester: -6th (Major/Minor) **Batch: (NEP batch 2022)**

ZOL622J2 ZOOLOGY – PRINCIPLES OF ANIMAL GENETICS

Name of the Teacher:-Dr. Wajid Majeed Khanday CREDITS: THEORY: 04

COURSE OBJECTIVE:

The learner will understand the principles of genetics.

Learning Outcome:

The learner will get the knowledge of genomics, inheritance, mapping, genetic diseases & human genome project and will utilize the knowledge to elucidate disease mechanisms, gene cloning and the pedigree analysis.

Unit	No. Of Lectures	Topic
UNIT 1	6	Mendelian and non-Mendelian inheritance
-do-	1	Concept of gene: allele, multiple alleles, pseudoalleles & lethal alleles
-do-	2	Sex determination and sex-linked characteristics; dosage compensation in mammals
-do-	6	Gene interactions: complementary and supplementary genes; Pleiotropy
UNIT 2	3	Concept of genomics and human genome project
-do-	2	Genetic mutations: gene & chromosomal
-do-	4	Genetic disorders and pedigree analysis
-do-	2	Linkage & Linkage maps
UNIT 3	3	Ecological genetics & polymorphism – phenotypic & genotypic polymorphisms
-do-	3	Genetic drift & genetic equilibrium
-do-	5	Hardy-Weinberg law & its applications
-do-	3	Inbreeding & outbreeding; causes & reasons of inbreeding: heterosis

UNIT 4	3	Gene cloning: an overview
UNIT 4	2	Restriction endonucleases: types & end modification enzymes
-do-	2	Extraction and purification of nucleic acids; PCR & gel electrophoresis
-do-	3	Vectors: plasmid & cosmid; gene library

Resource and Material

1. **Power Point Presentations**
2. **Hardcover Books and E-books**
3. **Internet**
4. **White Board Markers**
5. **Charts**
6. **Projector**

Teacher Incharge

Wajid

Head of the Department

Department of Zoology

Lesson Plan

Semester: -4th (Major) **Batch: (NEP batch 2023)**

ZOL422J1: ZOOLOGY – COMPARATIVE PHYSIOLOGY OF VERTEBRATES Credits: 03 (Theory)

Name of the Teacher:-Dr. Sabzar Ahmad Dar

Course Objective:

This course is designed to give a learner knowledge about the functions of different organ systems so as to lay a strong foundation in understanding their life-processes.

Learning Outcome:

After the completion of this course, a student will be able to understand the working of different organ systems and their defects/disorders.

Unit	No. Of Lectures	Topic
UNIT 1	3	Physiology of gastrointestinal tract and its associated glands; mechanical & chemical digestion
-do-	3	Absorption of food; neuro-endocrine control on digestion
-do-	3	Nature of excretory wastes; osmoregulation
-do-	3	Mechanism of urine formation and its regulation; urea cycle
UNIT 2	3	Physiology of blood circulation; cardiac cycle; heart rate, cardiac output and its regulation
-do-	3	Physiology of blood and lymph; coagulation of blood
-do-	3	Mechanism of respiration; respiratory volumes and capacities; respiratory pigments
-do-	4	Transport of respiratory gases, oxygen dissociation curve; regulation of respiration
UNIT 3	4	Conduction of nerve impulse; reflex action & its types; physiology of vision & hearing
-do-	4	Hormones – nature, functions, mode of action & regulation; hormonal disorders

-do-	3	Physiology of muscle contraction
-do-	4	Physiology of male & female reproduction; reproductive cycle in female primates with regulation

Resource and Material

1. **Power Point Presentations**
2. **Hardcover Books and E-books**
3. **Internet**
4. **White Board Markers**
5. **Charts**
6. **Projector**

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Head of the Department