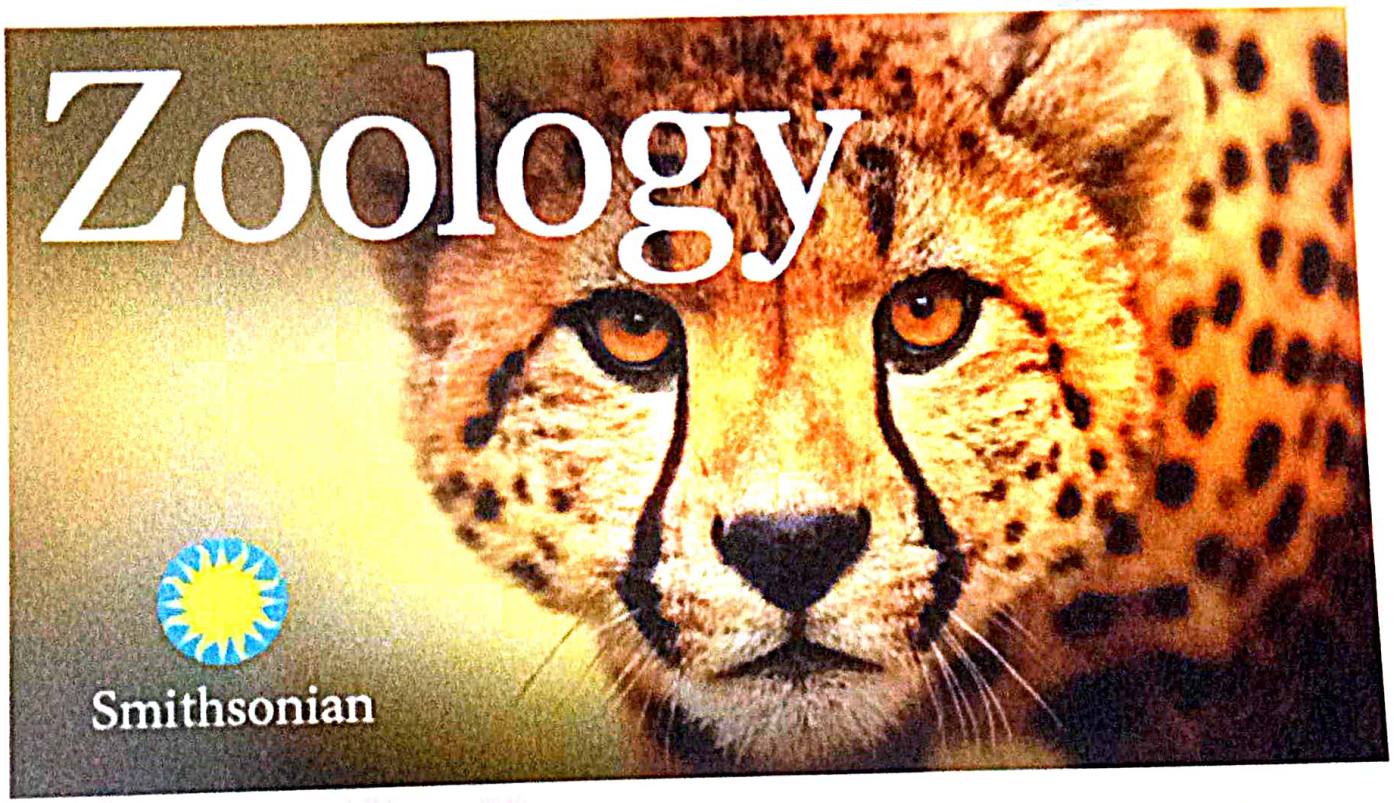
DODLA KOUSALYAMMA GOVERNMENT COLLEGE FOR WOMEN

Nellore, Andhra Pradesh - 524003

Autonomous College, College with Potential For Excellence

Re-accredited with 'A' Grade by NAAC



BOARD OF STUDIES

2019-2020

DEPARTMENT OF ZOOLOGY

ZOOLOGY MODIFIED SYLLABUS FOR I SEMESTER
ZOOLOGY - PAPER - I
ANIMAL DIVERSITY - NONCHORDATES

Periods:60

1.4 Brief history, Significance of Diversity of Non Chordates

UNIT - I

1.5 Protozoa

1.2.1 General characters

1.2.2 Classification of Protozoa up to classes with examples

1.2.3 *Elphidium* (type study)

1.6 Porifera

1.3.6 General characters

1.3.7 Classification of Porifera up to classes with examples

1.3.8 *Sycon* – External Characters, Types of cells,

1.3.9 Skelton in Sponges

1.3.10 Canal system in sponges

Unit - II

2.3 Coelenterata

2.1.1 General characters

2.1.2 Classification of Coelenterata up to classes with examples

2.1.3 Polymorphism in coelenterates

2.1.4 Corals and types of corals

2.4 Platyhelminthes

2.1.1 General characters

2.1.2 Classification of Platyhelminthes up to classes with examples

2.1.3 *Fasciola hepatica* - External Characters, Excretory system, Reproductive System,Life History and pathogenicity

Unit - III

3.3 Nemathelminthes

3.1.1 General characters

3.1.2 Classification of Nemathelminthes up to classes with examples

3.1.3 PARASITIC ADAPTATIONS IN HELMINTHIS

3.4 Annelida

3.2.3 General characters

3.2.4 Classification of Annelida up to classes with examples, Metamerism and its significance in Annelids.

3.2.3 *Hirudinaria granulosa* - External Characters, Digestive System, Excretory System and Reproductive System.

3.2.4Vermiculture - Scope, significance, earthworm species, processing, Vermicompost Economic importance of Vermicomposting

Unit - IV

4.3 Arthropoda

4.1.1 General characters

4.1.2 Classification of Arthropoda up to classes with examples

4.1.3 Prawn - External Characters, Appendages.

4.1.4 *Peripatus* - Structure and affinities

4.4 Mollusca

4.2.5 General characters

4.2.6 Classification of Mollusca up to classes with examples

4.2.7 Pearl formation in Pelecypoda,Torsion in Gastropods

4.2.8 Pila- External Structure, Digestive system

UNIT V

Echinodermata

5.1.1 General characters

5.1.2 Classification of Echinodermata up to classes with examples

5.1.3 Water vascular system in star fish

5.3 Hemichordata

5.2.4 General characters

5.2.5 *Balanoglossus* - Structure and affinities

Non-Chordata larval forms

5.3.8 Trochophore

5.3.9 Nauplius

5.3.10 Glochidium

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ZOOLOGY MODIFIED SYLLABUS FOR II SEMESTER (2019-20)
ZOOLOGY - PAPER - II
ANIMAL DIVERSITY - CHORDATES

Unit - I

1.1 General characters of Chordata

1.2 Protochordata

a. Salient features of Cephalochordata
b. Structure of *Branchiostoma*
c. Salient features of Urochordata
d. Structure and life history of *Herdmania*
e. Retrogressive metamorphosis in *Herdmania*

Unit - II

2.3 Cyclostomata

2.1.1 General characters of Cyclostomata
2.1.2 Comparison of the *Petromyzon* and *Myxine*

2.4 Pisces

2.2.3 General characters of Fishes
2.2.4 Classification of fishes up to Class level with examples
2.2.3 *Scoliodon* - External features, Respiratory system, Heart,

2.2.7 Migration in Fishes
2.2.8 Types of Scales
2.2.9 Dipnoi

Unit - III

3.3 Amphibia

3.1.1 General characters of Amphibian
3.1.2 Classification of Amphibia upto orders with examples.
3.1.3 *Rana hexadactyla* - External features, Digestive system, Respiratory system, Heart,
3.1.4 Parental care in Amphibia.

3.4 Reptilia

3.2.5 General characters of Reptilia
3.2.6 Classification of Reptilia upto orders with examples
3.2.7 Calotes - External features, Digestive system, Respiratory system, Heart, Brain
3.2.8 Identification of Poisonous snakes and Non Poisonous snakes
3.2.9 Poison apparatus, composition of Venom and its effects. Biting mechanism in snakes

Unit - IV

4.2 Aves

4.1.1 General characters of Aves

4.1.2 Classification of Aves up to subclasses with examples.

4.1.3 *Columba livia* - External features, Digestive system, Respiratory system, Heart, Brain

4.1.6 Flight adaptation in birds

Unit - V

5.4 Mammalia

5.1.1 General characters of Mammalia

5.1.2 Classification of Mammalia up to classes with examples

5.5 Dentition in mammals,Origin of mammals

REFERENCES:

- Invertebrate Zoology - E. L. Jordan and Verma
- Modern text book of Zoology-Invertebrates- R. L. Kotpal
- Biology of Animals Vol-1- Ganguly, Sinha, Adhikari
- Zoology for degree students- Dr. V.K. Agarwal
- Modern text book of Zoology-Vertebrates - R. L. Kotpal

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ZOOLOGY REVISED SYLLABUS FOR III SEMESTER

ZOOLOGY - PAPER - III

CYTOLOGY, GENETICS AND EVOLUTION (Modified syllabus 2019-2020)

Unit - I

1. Cytology– I

1.1Prokaryotic and Eukaryoticcells, Techniques in Cell Biology – Microscopy

1.2Electron microscopic structure of eukaryotic cell, Cytoplasm Matrix – Physical nature, Chemical organization and Biological Properties

1.3Plasma membrane – Fluid mosaic model (Singer & Nicholson 1972), Chemical composition of Plasma membrane, Functions of Plasma membrane: Exocytose, Endocytosis, Phagocytosis, Pinocytosis, Active and Passive Transport.

Unit – II

2. Cell organelles

2.1 Structure and functions of Endoplasmic Reticulum

2.2 Structure and functions of Golgi apparatus

2.3 Structure and functions of Lysosomes

2.4 Structure and functions of Ribosome

2.5 Structure and functions of Mitochondria

2.6 Structure and functions Nucleus

2.7 Chromosomes - Structure, types, functions

2.8 Cell cycle- definition and different stages of cell cycle

Unit - III

3. Genetics

3.1 Principles of inheritance, DiHybrid cross.

3.2 Incomplete dominance and Co- dominance,

3.3 Lethal alleles, Epistasis- Dominant and Recessive, Multiple Alleles(ABO Blood Grouping)

Unit – IV

4. Genetics – II

4.1 Sex determination – Chromosomal mechanisms-XX-XO, XX-XY, ZZ-ZW type, Genic balance theory of Bridges,

4.2 Sex linked inheritance- Eye colour in Drosophila, Haemophilia, and Colour blindness in Man.

4.3 Extra chromosomal inheritance

4.4 Human karyotyping

4.5 Transposable Genetic elements(Jumping or Mobile Genes)- definition and types of transposable elements

Unit-V

5. Evolution

5.1 Major events in History of life- Geological Time Chart

5.2 Lamarckism, Darwinism, Neo – Darwinism, Hardy-Weinberg Equilibrium.

5.3 Mutations, Variations, Isolating mechanisms,

5.4 Types of natural selection (directional, stabilizing, disruptive)

5.5 Modes of Speciation (Allopatric and Sympatric)

5.12 Evidences of Evolution- Homologous and Analogous Organs, Determination of age of rocks and fossils – Carbon dating method.

(2019-20)

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ZOOLOGY MODIFIEDSYLLABUS FOR IV SEMESTER

EMBRYOLOGY, PHYSIOLOGY AND ECOLOGY

Unit - 1

1. Developmental Biology and Embryology

1.1 Gametogenesis (Spermatogenesis and Oogenesis)
1.2 Fertilization, Development of Human Embryo up to Gastrulation(Formation of Primary germ layers)
1.3 Types of eggs
1.4 Types of cleavages
1.5 Formation and functions of Foetal membrane in chick embryo
1.6 Development, types and functions of Placenta in mammals

Unit - II

2. Physiology - I

2.1 Elementary study of process of digestion and absorption.

2.2 Respiration – Pulmonary ventilation, Transport of oxygen and carbon dioxide

2.3 Circulation - Structure and functioning of heart, Cardiac cycle

2.4 Excretion - Structure of nephron, urine formation, counter current mechanism

Unit - III

3. Physiology - II

3.1 Nerve impulse transmission - Resting membrane potential, origin and propagation of action potentials along myelinated neuron.

3.2 Muscle contraction - Types of Muscles, Ultra structure of muscle fibre, molecular and chemical basis of muscle contraction

3.3 Endocrine glands – Structure, secretions and the functions(of hormones of pituitary, thyroid, parathyroid, adrenal glands and pancreas)

Unit - IV

4. Ecology - I

4.1 Structure and function of an Ecosystem – (Example: lake)food chains and food web, energy flow in ecosystem

4.2 Abiotic factors of an Ecosystem - Temperature, light, water,

4.3 Nutrient cycles - Nitrogen, carbon cycle.

4.4Ecology and Human welfare – Conservation of Water resources and its Managements

Unit - V

5. Ecology - II

5.1 Habitat and ecological niche

5.2 Population Ecology (characteristics of Population, Growth Curves, Age Pyramids)Wildlife Conservation-concept of threatened species, necessity for wild life conservation and modes of wild life conservation-subheadings

Zoogeography

5.3 Study of physical and faunal peculiarities of Zoogeographical regions (Oriental, Australian and Ethiopian regions.)

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ZOOLOGY SYLLABUS FOR VI SEMESTER

ZOOLOGY –ELECTIVE PAPER: VII-(A)

IMMUNOLOGY

Periods: 60 **Max. Marks: 100**

Unit - I

1.1 Overview of Immune system

1.1.1 Introduction to basic concepts in Immunology

1.1.2 Innate and adaptive immunity

1.2 Cells and organs of Immune system

1.2.1 Cells of immune system

(Lymphocytes, T lymphocyte, B lymphocyte, NK cell, K Cell, Macrophage, Dendritic cells, Eosinophil, Basophil, Neutrophil, APC and mast cell)

1.2.2 Organs of immune system-Primary and Secondary

Unit - II

2.1 Antigens

2.1.1 Basic properties of antigens

2.1.2 B and T cell epitopes, haptens and adjuvants

2.1.3 Factors influencing immunogenicity

Unit - III

3.1 Antibodies

3.1.1 Structure of antibody

3.1.2 Classes and functions of antibodies

3.1.3Monoclonal antibodies

Unit - IV

4.1 Immune system in health and disease

4.1.1 Classification and brief description of various types of hyper sensitivities

4.1.2 Introduction to concepts of autoimmunity and immunodeficiency

4.2 Vaccines

4.2.1 General introduction to vaccines

5.2.2 Types of vaccines

Unit-V

1.1 Immunological Techniques

1.1.1 Precipitation, Agglutination,ABO blood grouping,Rh blood typing,Widal test

1.1.2 Simple double Immunodiffusion, Immunoelectrophoresis, Rocket Immunoelectrophoresis, ELISA

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ZOOLOGY SYLLABUS FOR CLUSTER ELECTIVE –VIII-B:
VI SEMESTER

AQUACULTURE

Cluster Elective Paper: VIII-B-1

PRINCIPLES OF AQUACULTURE

Periods:60Max.Marks:100

Unit – I

1.1 Introduction / Basics of Aquaculture

1.1.1 Definition, Significance and History of Aquaculture
1.1.2 Present status of Aquaculture – Global and National scenario
1.1.3 Major cultivable species for aquaculture: freshwater, brackish water and marine.
1.1.4 Criteria for the selection of species for culture

Unit – II

2.1 Types of Aquaculture

2.1.1 Freshwater, Brackishwater and Marine
2.1.2 Concept of Monoculture, Polyculture,Composite culture, Monosex culture and Integrated fish farming ,semi- intensive and intensive culture of shrimp.

2.2Culture systems

2.2.1 Ponds, Raceways, Cages, Pens, Rafts and water recirculating systems

Unit – III

3.1 Design and construction of aquafarms

3.1.1Criteria for the selection of site for freshwater and brackish water pond farms

3.1.2 Design and construction of fish and shrimp farms

3.2 Seed resources

3.2.1 Natural seed resources and Procurement of seed for stocking: Carp and shrimp

3.3 Nutrition and feeds

3.3.1 Nutritional requirements of a cultivable fish and shellfish

Unit – IV

4.1Management of carp culture ponds

4.1.1 Culture of Indian major carps: Pre-stocking management – Dewatering, drying, ploughing/desilting; Predators, weeds and algal blooms and their control, Liming and fertilization; Stocking management – Stocking density and stocking; Post-stocking management – Feeding, water quality, growth and health care; and Harvesting of ponds

Unit – V

5.1Culture of shrimp (*Litopenaeus vannamei*)

5.2 Culture of pearl oysters

5.3 Culture of seaweeds-species cultured, culture techniques, important by-products, prospects

5.4 Culture of ornamental fishes – Setting up and maintenance of aquarium; and breeding.

REFERENCES BOOKS

33. Bardach, JE *et al.* 1972. *Aquaculture – The farming and husbandry of freshwater and marine organisms*, John Wiley & Sons, New York.
34. Bose AN et al.1991. *Coastal aquaculture Engineering*. Oxford & IBH Publ.Co.Pvt.Ltd.
35. Chakraborty C & Sadhu AK. 2000. *Biology Hatchery and Culture Technology of Tiger Prawn and Giant Freshwater Prawn*.Daya Publ. House.
36. FAO. 2007. *Manual on Freshwater Prawn Farming*.
37. Huet J. 1986. *A text Book of Fish Culture*. Fishing News Books Ltd.
38. ICAR. 2006. *Hand Book of Fisheries and Aquaculture*. ICAR.
39. Ivar LO. 2007. *Aquaculture Engineering*. Daya Publ. House.
40. Jhingran V.G. 2007. *Fish and Fisheries of India*. Hindustan Publ. Corporation, India.
41. Landau M. 1992. *Introduction to Aquaculture*. John Wiley & Sons.
42. Lovell RT.1998. *Nutrition and Feeding of fishes*. Chapman & Hall.
43. Mcvey JP. 1983. *Handbook of Mariculture*. CRC Press.
44. MPEDA: *Handbooks on culture of carp, shrimp, etc.*
45. New MB. 2000. *Freshwater Prawn Farming*. CRC Publ.
46. Pillay TVR 1990. *Aquaculture- Principles and Practices*, Fishing News Books Ltd., London.