

Course Name: Recent trends in Zoology**Course Code: RCW-4-12**

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COURSE OBJECTIVES

The Doctor of Philosophy program is designed to prepare each student to actively participate in research and teaching in the field of Zoology along with other fields of Life Sciences. Students in this programme acquire knowledge, critical thinking skills, and experience in conducting cutting-edge research.

UNITS	CONTENTS	Contact Hrs.
I	Biodiversity: levels of biodiversity, value of biodiversity, regional, national and global status of biodiversity, threats to biodiversity, conservation and management of biodiversity, biodiversity act and related international conventions, bio-geographical classification of India, Environmental stresses and their management, global warming. Atmospheric ozone, Biodegradation and bioremediation of chemicals.	12hrs.
II	Analysing the application of techniques in animal sciences research: types of microscopy; microtomy. Biophysical methods: Analysis of biomolecules using UV/visible, fluorescence, circular dichroism, NMR and ESR spectroscopy, structure determination using X-ray diffraction and NMR; analysis using light scattering, different types of mass spectrometry and surface plasma resonance methods	12hrs.
III	Biological significance of nutrients- carbohydrates, proteins, fats, vitamins and minerals, Physiology of digestion with special reference stomach and intestine, Heart, Composition of blood, blood groups, Mechanism of blood coagulation. Types and functional significance of endocrine glands -adrenal , thyroid and pancreas	12hrs.
IV	Planktons: Plankton collecting nets, preservation, zooplanktons, importance of zooplanktons. Insects: Collecting methods, overview of insect orders, Invasive insects, Chordates & vertebrates: Evolution of notochord and vertebral column, Colonization of vertebrates on land, evolution of amphibians and amniotes (reptiles and mammals) Avian Diversification: Evolution and diversification birds from reptiles, Monotremes and marsupials	12hrs.
V	Chemistry of gene: structure of nucleic acids (A,B,C & Z DNAs RL model of Sasisepharan, super coiling, genetic & Non-genetic RNA, DNA replication, DNA repair (excision repair, mismatch repair and SOS repair) and genetic diseases in humans. restriction enzymes in cloning, techniques used in recombinant DNA technology and its application, DNA fingerprinting.	12hrs.

REFERENCE BOOKS :

1.	Molecular Cell Biology	J. Darnell, H. Lodish and D. Baltimore Scientific American Book
2.	Statistical Methods	S.P. Gupta. S. Chand Publication
3.	Biotechnology	U. Satyanarayana, Books and Allied (P) Ltd, Kolkata.
4.	Lehninger	Principles of Biochemistry 5th Ed 2009, Dave Nelson and Mike Cox Publisher WH Freeman

