

### Course Profile

Sl.No.	Title of the Paper	Core/Elective	Credits
1.	Paper-I: Research Methodology	Core	5
2.	Paper –II: Recent Advances in Zoology	Core	5
3.	Paper-III	Elective	5
	1. Parasitology		
	2. Perspectives in Applied Zoology		
4.	Dissertation		21
<b>Total credits</b>			<b>36</b>

### M.Phil., Zoology (2018-19 Onwards)

#### Course Profile

CORE	TITLE OF PAPER	PAPER CODE
PAPER -I	RESEARCH METHODOLOGY	5M18/CRM
PAPER-II	RECENT ADVANCES IN ZOOLOGY	5M18/CRA
<b>ELECTIVE</b>		
PAPER-III-1	PARASITOLOGY	5M18/EPA
PAPER III-2	PERSPECTIVES IN APPLIED ZOOLOGY	5M18/EPZ
	DISSERTATION	5M18/PRO

## Research Methodology

Core Paper-I

Credits:5

Course Code: 5M18/CRM

### Objectives

To enable the students to

- Systematically present the thesis of the scientific work done.
- Present the result statistically.
- To learn different techniques in the field of research.

### UNIT-I

Research-Meaning, objectives, Types, Importance and Methods in Biological Sciences.  
Tenets of writing a thesis and a scientific paper: preparation of thesis and manuscript for publication.  
Citing of reference, foot notes, Figures, Plates, Proof reading.

### UNIT-II

Principles of bio-physical methods for bio-polymer structure, determination of X-ray diffraction, fluorescence, UV, ORD/CD Visible, NMR and ESR Spectroscopy, hydrodynamics method, atomic absorption and plasma emission spectroscopy.

### UNIT-III

Principles and applications of tracer techniques in biology, radiation dosimetry, radioactive isotopes and half life of isotopes, autoradiography, Cerenkov radiation, Liquid scintillation spectrometry.

### UNIT-IV

Principles and practice of statistical methods in biological research, samples and population, basic statistics, average statistics of dispersion, coefficients of variation, standard error, confidence limits. Probability distribution (Binomial, Poisson and normal test of statistical significance, simple correlation and regression, analysis of variance).

## UNIT-V

Teaching technology-Types-Objective based-Skill based-Teaching large group-lecture, seminar, symposium, panel discussion, team teaching-project, workshop. Teaching small groups-remedial teaching.

### Reference books:

1. Gupta, S.P, 1984, Statistical Methods, Sultan Chand & Sons, New Delhi.
2. Gupta, R.C, Research Methodology.
3. Pillai, R.S.N. and V Bhagavathi, 1989, Statistical Theory and Practice.
4. Sokal, R.R and F.J, Roulf, 1969, Biometry. The Principles and practice of Statistics in Biological Research.
5. Vedanayagan, E.G, 1988, Teaching technology for college teachers, Sterility Publishers Private Ltd.

### Question paper template

Component	Nature of Question	Maximum Marks
Part A	Description- Contains 5 questions to be answered out of 8 given questions covering all units	5 x 8=40
Part B	Application/ Analysis/ Synthesis/ Evaluation- Contains 3 questions to be answered out of 5	3 x 20= 60



## Recent Advances in Zoology

Core paper –II

Credits: 5

Course Code :5M18/CRA

Objectives:

To enable the students

- To learn about the recent trends in Zoology.
- To obtain knowledge in the field of biotechnology
- To learn the techniques involved in tissue culture both in plants and animals.

### UNIT – I

Enzymes Kinetics (negative and positive co-operatively) regulatrions of enzymatic activity, active sites Co-enzyme activator and inhibitors, Iso enzymes.

### UNIT – II

Energy metabolism (concept of free energy) thermodynamic principles in biology, energy rich bond, Weak interactions, couple reactions and oxidative phosphorylation,, group transfers, biological energy transducers, bio-energetics.

### UNIT – III

Lysogeny and lytic cycle in bacteriophages, Bacterial transformation, host cell restriction, transduction, complementation, molecular recombination, DNA ligases, Topoisomerases, gyrases, methylases, nucleases, restriction endonucleases, plasmids, cosmids, bacteriophages and their use in gene cloning for DNA, libraries and genomic libraries.

### UNIT – IV

Cell and tissue culture in plants and animals, primary culture, cell line, cell clone, callus culture, soma clonal variations, micro propagation, somatic embryogenesis, haploidy, protoplast fusion, somatic hybridization, hybrids, gene transfer by micro injection, trans genesis, allopheny, artificial seeds.

### UNIT – V

Structure and organization of membrane glycol conjugates and proteins in membrane system, ion transduction Pase. Hormone mediated message transduction, adenyl nuclease protein kinase systems, neuro – transmitter, acetylcholine system, model membranes and liposomes.

## Parasitology

Elective- I

Course Code : 5M18/EPA

Credits : 5

### Objectives

To enable the students to

- Understand the principles of parasitism and host parasitic interaction
- Understand the epidemiology of parasitic infection
- Analyse the pathogenic effects of helminthes

### UNIT- I

Introduction- parasites in general- nature of parasitism- parasites and food habits. Definitive and intermediate host

### UNIT-II

Host- parasite relationship. Effects of parasitism on hosts. Mutual tolerance of hosts and parasites. Host susceptibility and specificity.

### UNIT-III

Kinds of parasites- Helminths – Cestodes, Trematodes and Turbellarians, Tape worm in particular .

### UNIT-IV

Distribution and incidence- morphology- habits and biology- pathogenicity- mode of infection and epidemiology.

### UNIT-V

Common disease caused and their control, diagnosis, treatment and prevention.

### Reference books:

1. Cheng, Parasitology
2. Gerald D.S. and L.S. Roberts, Foundation of Parasitology
3. Kotpal Series, Helminths.
4. Soulsby, E.J.L., Helminths, Arthropods and Protozoa of Domesticated Animals.

## Perspectives in Applied Zoology

Elective II

Course Code : 5M18/EPZ

Credits: 5

### Objectives

To enable the students

- To understand the techniques and applications of fisheries
- To understand the biodiversity of animals and their protection.
- To understand the applications of bioinformatics in biology.
- To learn different biotechnological techniques in the field of research.
- To understand animal behavior.

### UNIT-I

Application of biometrics in fisheries- Formulated feeds and live feeds- fish parasites and disease-culture techniques in aquaculture- water quality parameters in fish farm

### UNIT- II

Biodiversity definition- types- ecosystem diversity- hotspots of India- threats to biodiversity- habitat loss- man- wild life conflicts- endangered and endemic species of India- conservation of biodiversity.

### UNIT-III

Bioinformatics- applications in biology- genomics- retrieval of potential genes- gene products- proteomics- retrieval of protein sequence.

### UNIT-IV

Biotechnology- isolation of chromosomal DNA, plasmids and bacteriophage DNA- cloning studies in microorganisms, plants, animals and cell lines.

### UNIT-V

Animal behavior- learning- instincts- reproductive behavior in animals.

### Reference books:

1. Brown, T.A., 1998 Gene cloning, An Introduction- III edition Stanley Thornes Publishing.
2. Jhingran, C.G 1981. Fish and Fisheries of India. Hindustan publishing co., India.
3. Murthy, C.S.V. 2003 Bioinformatics 1st edition, Himalaya Publishing house, New Delhi.
4. Prosser, C.L. 1973 Comparative animal physiology. W.B. Saunders Co.