# THIRUVALLUVAR UNIVERSITY

MASTER OF PHILOSOPHY

## ZOOLOGY

### (FT/PT)

### PART I

### CORE COURSE I
### RESEARCH METHODOLOGY

**UNIT-I: RESEARCH METHODOLOGY**

Meaning of research - Objectives of research - motivation of research - Types, approaches and significance - Methods versus methodology - Research in scientific methods - Research process - Criteria for good research - Problem encountered by research in India - Funding agencies.

**UNIT-II: RESEARCH DESIGN**

Research Problem: Selecting the problem - Necessity of defining the problem - Techniques involved in defining the problem - Research design - Needs and features of good design - Different research design - Basic principles of experimental designs.

**UNIT-III: DATA COLLECTION AND DOCUMENTATION**

Data collection methods - Data types - Processing and presentation of data - Techniques of ordering data - Meaning of primary and secondary data - The uses of computers in research - The library and internet - Uses of search engines - virtual libraries - common software for documentation and presentation.

**UNIT-IV: DATA AND ERROR ANALYSIS**

Statistical analysis of data - Standard deviation - Correlation - Comparison of sets of data - Chi squared analysis for data - Characteristics of probability distribution - Binomial, Poisson and normal distribution - Principle of least square fittings - Curve

fitting - Measurement of errors - Types and sources of errors - Determination and control of errors.

**UNIT-V: RESEARCH COMMUNICATION**

Meaning of research report - Logical format for writing thesis and paper - Essential of scientific report: abstract, introduction, review of literature, materials and methods and discussion - Write up steps in drafting report - Effective illustrations: tables and figures - Reference styles: Harvard and Vancouver systems.

**REFERENCE BOOKS:**

1. Research Methodology, Methods and Techniques - C.R. Kothari - Wishwa Prakasam Publications, II Edition.
2. Research: An introduction - Robert Ross - Harper and Row Publications.
3. Research methodology - P. Saravanavel - Kitlab Mahal, Sixth Edition.
4. A Hand book of Methodology of Research - Rajammal P.A. Devadass - Vidyalaya Press
5. Introduction to Computers - N. Subramanian
6. Statistical methods - G.W. Snedecor and W. Cocharan - Oxford and IBH, New Delhi.
7. Research Methodology Methods and Statistical Techniques - Santosh Gupta.
8. Statistical Methods - S.P. Gupta
9. Scientific social surveys and research - P. Young - Asia Publishers, Bombay.
10. How to write and publish a scientific paper - R.A. Day - Cambridge University Press.
11. Thesis and Assignment writing - Anderson - Wiley Eastern Ltd.

# PART I

## CORE COURSE II
## RECENT ADVANCES IN ZOOLOGY

**UNIT-I:**

Cell and Tissue Culture in Animals - Primacy Culture - Cell Line - Cell Clone - Callus Culture - Micro Propagation etc.

**UNIT-II:**

Structure and Organization of Membranes - Ion Translocation - Neurotransmitters Systems - Model Membranes.

**UNIT-III:**

Biochemistry and Molecular Biology of Cancers, Oncognes, Chemical Carcinogenesis, Genetics and Metabolic Disorders, Hormonal Imbalance.

**UNIT-IV:**

Immunoglobulin Classes, Lymphkinesis, T-Cell Receptors, HLA, Autoimmunity, Regulation of Immune Responses, Mechanism of Antibody Diversity.

**UNIT-V:**

Enzyme Kinetics (Negative And Co-Positive) - Regulations of Enzymatic Activity - Active Sites, Co - Enzyme - Activities Inhibits and Iso - enzymes.

**UNIT-VI:**

Energy Metabolism - Thermodynamic Principles in Biology - Energy Rich Bond, Weak Interactions Couple Reactions and Oxidative Phospharylation, Group Transfers Biological Energy - Transducers, Bioenergetics.

**REFERENCE BOOKS:**

1. Watson, J.D, 1980. Molecular Biology of Gene, W.A. Benjamin & Co., New York.
2. Ayala, F.J, 1980. Modern Genetics, The Mc Millar Co., New York.
3. Sinnet, E.W and Dobzheasky, 1958. Principles of Genetics, Mcgraw Hill Co., New York.
4. E.D.P De Robert's 1980. Cell and Molecular Biology, Hort Saunders Co.,
5. James D. Watsen., Tania A. Bakar and Stephen.P. Bell etc. 2004. Molecular Biology of the Gene.
6. Williams. S and Michael.K. 2003. Concepts of Genetics.