

PH.D COURSE WORK

2016-2017

SYLLABUS FOR COURSE WORK

PAPER:- 1

(compulsory)

FILL MARK :- 100

PASS MARK :- 50

➤ **UNIT :- 01 Research Methodology :-**

1. Introduction Of Research Methodology : **Meaning** Of Research, **Objective** Of Research, **Types** Of Research **Significance** Of Research.
2. Research Design : **Meaning**, **Need** And **Features** Of Good Research Design, **Types** Of Research Designs, **Basic Principles** Of Experimental Design, Design Of Experiments.

➤ **UNIT :-02**

1. Data Collection : Primary And Secondary Data, Methods Of Collection.
2. Hypothesis : Definition, Testing Of Hypothesis, **Procedures** of hypothesis testing, Flow diagram for hypothesis testing, Parametric and Non Parametric Tests for Testing Of Hypothesis. Limitation of test of hypothesis.

➤ **UNIT:-03 Data processing and analysis :-**

1. Biostatistics : Correlation Co-Efficient, Simple Linear Regression, Students "T" Test, Chi - Square Test, ANOVA - One Way, Two Way And Multiple Way.
2. Computer science
Introduction to computer and their application :
(WINDOWS,WORD,EXCEL,POWER POINT).
3. COMPUTER NETWORKS AND WORLD WIDE WEB
Internet, Email. Database and Management System- Information Retrieval - Use Of Computer for Stastical Analysis.

PAPER :- II

FULL MARK :- 100

PASS MARK :- 50

- Chromatography :- Ion Exchange, Gel Filtration, HPLC.
- Electrophoresis :- Agarose and SDS - PAGE for Separation Of Nucleic Acid and Protein.
- Spectroscopy :- Atomic Absorption, Fluorescence and NMR
- Techniques for Microbial Culture and Preparation of Culture Media for Bacteria and Fungi
- Fermentation Technology.
- Use of Antibody in Basic and Clinical Research; ELISA & IMMUNO-ASSAY.
- Animal Cell Culture Techniques. *ppt download in download folder.*
- Sampling and Identification of Plankton and Benthos.
- Estimation of Primary and Secondary productivity of different ecosystems.
- Determination of LC_{50} And LD_{50} by Various Methods.
- Biostatistics : Normal distribution of data, multiple correlation and regression, concept of mathematical models.
- Microscopy : Fluorescence, Scanning and Electron.
- Biotechnology : Mechanism of DNA cleavage, cloning, vectors - types and properties, important vectors. rDT, PCR, application of biotechnology. *vectors ppt*

❖ Suggested References :-

1. Principles of Biochemistry - Wilson and Walker
2. Biological Techniques - S.V.S Rana
3. Manual of Experimental Biology - Abhijit Dutta
4. Experimental Biotechnology - Abhijit Dutta
5. Spectroscopy - V.K Sharma
6. Textbook of Physical Biochemistry - David Friefelder
7. Lehninger's Principles Of Biochemistry
8. Biochemistry - Voet & Voet
9. Animal Cell Culture - Ian Freshney
10. Introduction to Microbiology - Anantha Krishnan & Pannikar
11. Industrial Microbiology - Cashida
12. APHA - 19th Edition
13. Limnological Methods By Wetzel
14. Ecological Method - Southwood
15. Chemical and Biological Methods for Water Pollution Studies - Trivedy & Goel
16. Physical Examination of Water, Sewage & Industrial Effluents - N. Manivaskam
17. Biostatistical Analysis - J.H. Zar
18. Biostatistics - Khan & Khanam