

# KOLHAN UNIVERSITY, CHAIBASA

## Ph.D Course Work

### SYLLABUS FOR COURSE WORK (For Science faculties)

PAPER – 1

(Compulsory Paper)

Full Mark – 100

University Exam. - 70 Marks

Internal Assessment – 30 Marks

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 :  
(WINDOWA, WORD, EXCEL, POWER POINT)  
COMPUTER NETWORK AND WORLD WIDE WEB  
Internet, Email. Database and Management System – information Retrieval – Use of Computer for Stastical Analysis.

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Ph.D

# PH.D COURSE WORK

2016-2017

## SYLLABUS FOR COURSE WORK

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(compulsory)

**FILL MARK :- 100**

**PASS MARK :- 50**

*CLASSES - 40*

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Introduction to computer and their application :  
(WINDOWS,WORD,EXCEL,POWER POINT).
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## PAPER :- II

**FULL MARK :- 100**

**PASS MARK :- 50**

CLASSES

40+40

- / 2 • Chromatography :- Ion Exchange, Gel Filtration, HPLC.
- / 2 • Electrophoresis :- Agarose and SDS - PAGE for Separation Of Nucleic Acid and Protein.
- / 2 • Spectroscopy :- Atomic Absorption, Fluorescence and NMR
- 2 • Techniques for Microbial Culture and Preparation of Culture Media for Bacteria and Fungi
- 2 • Fermentation Technology.
- 2 • Use of Antibody in Basic and Clinical Research; ELISA & IMMUNO-ASSAY.
- 1 • Animal Cell Culture Techniques.
- 1 • Sampling and Identification of Plankton and Benthos.
- 1 ✓ Estimation of Primary and Secondary productivity of different ecosystems.
- 1 • Determination of  $LC_{50}$  And  $LD_{50}$  by Various Methods.
- \* • Biostatistics : Normal distribution of data, multiple correlation and regression, concept of mathematical models.
- 1 • Microscopy : Fluorescence, Scanning and Electron.
- 1 • Biotechnology : Mechanism of DNA cleavage, cloning, vectors - types and properties, important vectors. rDT, PCR, application of biotechnology.

### ❖ 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 - 19<sup>th</sup> 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

① Resource management & Concept of Biodiversity  
Evaluation of Biodiversity indices

② • Hormones: Types, Neurohormones, Mechanism of hormone

Action. ~~Endocrine~~ Endocrine glands & their hormones. Vertebrate

② • Bacteria vi...