



M.Sc. – Semester I Microbiology and Biotechnology
PAPER: (MB/BT) **407: BIOPHYSICS AND STASTICAL MEASUREMENTS**
[CSIR – UGC – NET - TOPIC:13 (C, D, H)]

Total Credits – 3

Total Hours – 45

Objectives:

- To study the structure, properties and functions of biomolecules at an atomic or molecular level.
- To design data collection plans, analyze data appropriately and interpret and draw conclusions from those analyses.

Unit – 1: Biophysical method

Molecular analysis using UV/visible, fluorescence, circular dichroism, NMR and ESR spectroscopy Molecular structure determination using Xray diffraction and NMR, Molecular analysis using light scattering, different types of mass spectrometry and surface plasma resonance methods.

Unit – 2: Methods in field biology

Methods of estimating population density of animals and plants, ranging patterns through direct, indirect and remote observations, sampling methods in the study of behavior, habitat characterization: ground and remote sensing methods.

Unit – 3: Statistical methods

Measures of central tendency and dispersal; probability distributions (Binomial, Poisson and normal); Sampling distribution; Difference between parametric and non-parametric statistics; Confidence Interval; Errors; Levels of significance; Regression and Correlation; t-test; Analysis of variance; X2 test;; Basic introduction to Muetrovariate statistics, etc.

References:

1. Biophysical Chemistry (Principles and Techniques) – Upadhyay, Publisher Himalya Publishing House, 2016.
2. Life Science: Fundamentals and Practice Part 2 Pranav Kumar and Usha Mina Pathfinder Publication 7th Edition.
3. Principles and Techniques of Biochemistry and Molecular Biology – Wilson and Walker, Publisher Cambridge University Press, 2018, Eighth Edition.
4. Plant Breeding Principles & Methods – 2015 – B.D. Singh, Publisher Kalyani, 2015 Genomes 3 – T.A. Brown, Publisher Graland science, 2007.
5. Introduction To Plant Tissue Culture – Razdan MK, Publisher Science Publisher, 2019, Third Edition.