

**Department of Human Genetics**  
Punjabi University, Patiala 147002  
(Established under Punjab Act No. 35 of 1961)

**Syllabus for Ph. D. Entrance Test for Session 2024-25**

**SECTION-A**  
**(RESEARCH METHODOLOGY)**

Research design Types of data Methods of data collection Sampling design Descriptive, prospective, retrospective, Cross-sectional longitudinal, Cohort, Case Control studies and Meta analysis Clinical trails and their utility in Research Null and Alternative hypothesis Questionnaire and Schedule Probability and non Probability methods of sampling.

Statistical treatment of the data Mean, Mode, Median ,Standard deviation, Standard Error, Confidence interval and Confidence limits Test of significance Chi-sqaure test, Student test test correlation and regression Hazards and Radio labled chemicals, their sterilization and incineration.

**SECTION-B**  
**(SUBJECT)**

Structure of DNA and RNA, Genetic code, Replication and Transcription DNA damage assessment and repair. Autosomal and Sex linked inheritance, Human Chromosomal abnormalities, Genetic engineering and Genetic screening.

Epidemiology of infectious and infectious diseases Mutation, Selection, Hybridization and Genetic drift, Genetic admixture and Genetic load linkage and Crossing Over, Gene Mapping, Fluorescence in situ hybridization , Gene therapy and Stem Cell research in clinical genetics Oncogenes, Tumor suppressor genes. Recombinant DNA Technology and is applications. Cell based DNA cloning, Principles of Docking and Ligand design.