

**Unit 1**

Scope of Biostatistics, Samples and population concept, Collection of data sampling techniques, Processing of data presentation of data, Measures of Central tendency- Arithmetic, Harmonic and Geometric Mean, Mode and Median and their applications, merits and demerits; Measures of dispersion- Range, Variance, Standard Deviation Coefficient of variance, their applications, merits and demerits.

**Unit 2**

Probability and Conditional probability, Correlation and Regression analysis: Linear, bivariate regression analysis, Theoretical distributions- Binomial and Poisson Distribution and their Properties; Normal distribution and its properties, Skewness and kurtosis, Significance tests: The meaning of significance, hypothesis testing, Student's T-test.

**Unit 3**

Principle and biological applications of biological techniques- Microscopy (optical, TEM and SEM), Colorimetry, Spectrophotometry, Fluorimetry, Chromatography (Gel filtration and ion exchange), Electrophoresis, Electrofocussing, Centrifugation.

**Unit 4**

Nucleic acid hybridization and FISH, Polymerase chain reaction, Southern Blot, Northern Blot, Western Blot and ELISA.

**Suggested readings**

1. Biostatistics-A foundation for Health Science, Daniel WW, John Wiley (2003).
2. Statistical Methods, Medhi J, Willey Eastern Limited, (1998)
3. Harper's Biochemistry, Murray RK et al., Prentice Hall International (2006).
4. Physical Chemistry of Macromolecules, Tanford, C., John Wiley and Sons, (2005).

1. Verification of Beer-Lambert's law
2. Simple, compound, phase-contrast and fluorescence microscope
3. Paper chromatography of sugar.
4. Colorimetric estimation of ascorbic acid.
5. Spectrophotometric quantification of DNA
6. Calculation of Mean, Standard Deviation, Frequency distribution graphs and curves
7. Significance test: Chi-square test, Student's t-test for paired data.

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1. Harper's Biochemistry, Murray RK et al., Prentice Hall International (2006).
2. Physical Chemistry of Macromolecules, Tanford C., John Wiley and Sons, (2005).
3. Biostatistics-A foundation for Health Science, Daniel WW, John Wiley (2003).
4. Statistical Methods, Medhi J, Willey Eastern Limited, (1998)
5. Advanced Biology Statistics, Oxford University Press; Edmondson A and Druce D (1996).