

## Course contents for Biostatistics

1. **Faculty:** FLSB
2. **Course Code:**
3. **Course Title:** Biostatistics
4. **Number of Credits:** Two
5. **Course objectives:**

Statistics is the practice or science of collecting and analyzing numerical data in large quantities, especially for the purpose of inferring proportions in a whole from those in a representative sample. In this course, basic bio statistical methods will be discussed, and various tests of hypotheses will be explained with special emphasis to parametric and non-parametric tests. Students also will get an opportunity to learn some software-based statistical analysis.

**6. Minimum prerequisites for taking this course, if any:**

Basic knowledge of mathematics, data analysis and interpretation would be expected.

**7. Course structure with units, if applicable:**

Unit 1: Basic concepts and terminology of biostatistics.

Unit 2: Various ways of the presentation of Data and types of variables.

Unit 3: Central Tendency and their applications.

Unit 4: Measures of variation.

Unit 5: Elementary properties of probability and calculating the probability of an event.

Unit 6: Normal probability distribution, Skewness and Kurtosis; Binomial and Poisson distribution.

Unit 7: Types of Statistical errors.

Unit 8: Using sample data to make estimates about population parameters; Confidence interval and degree of freedom.

Unit 9: Using sample statistics to test hypotheses about population parameters and various Hypotheses testing.

Unit 10: Analysis of frequency data: Introduction to chi-square distribution; Properties of Chi-Square distribution.

Unit 11: Student's t-test and paired t-test.

Unit 12: Analysis of Variance.

Unit 13: Statistical inference and the relationship between variables; Correlation and Regression.

Unit 14: Statistical inference and the analysis of data variability; Randomized design.

Unit 15: Special techniques, such as non-parametric tests.

Unit 16: Various statistical tests used in biological samples including clinical studies.

**5. Reading suggestions:**

1. Fundamentals of Biostatistics by Bernard Rosner. Duxbury Press (2010)
2. Biostatistics for health sciences by R. Clifford Blari and R. Taylor. Prentice Hall Press. 2007.
3. Principles of Biostatistics by M. Pagano & K. Gauvreau.
4. Basic & Clinical Biostatistics by B. Dawson & R. Trapp.

## **10. Evaluation:**

Theory:	Mid-semester Written Examination	: 40% Marks
	End-semester Written Examination	: 40% Marks
	Quiz / Assignment/Presentation (oral / poster)/other	: 20% Marks