(BM-312) - Biostatistics

Course Outline:

Theory:

1. **Descriptive Biostatistics**
    1. Introduction to Biostatistics,
    2. Measures of Central Tendency,
    3. Measures of Dispersion,
    4. Frequency Distribution,
    5. Graphical Methods (scatter plot, histogram, bar chart, stem-leaf plot etc.)
2. **Introduction to Probability**
    1. Multiplication and Addition Laws of Probability,
    2. Conditional Probability,
    3. Bayes' Rule and Screening Tests, Bayesian Inference
3. **Discrete Probability Distributions**
    1. Expected value and Variance of a Discrete Random Variable,
    2. Cumulative-Distribution Function of a Discrete Random Variable, Permutations and Combinations,
    3. Binomial Distribution,
    4. Poisson Distribution
4. **Continuous Probability Distributions**
    1. Normal Distribution,
    2. Properties of the Standard Normal Distribution,
    3. Normal Distribution Applications,
    4. Estimation of the Mean and Variance of a Distribution
5. **Sampling Distributions**
    1. Central Limit Theorem
6. **Hypothesis Testing**
    1. Hypothesis Testing (z-test t-test (one and two sample),
    2. chi-squared test),
    3. Analysis of Variance (ANOVA)(one-way & two-way),
    4. Regression analysis
7. **Statistical Software**
    1. Make appropriate use of statistical software (STATA, SPSS, MS- EXCEL etc.).

Suggested Teaching Methodology:

- Lecturing
- Written Assignments Report Writing

Suggested Assessment:

Theory (100%)

- Sessional (20%)
- Quiz (12%)
- Assignment (8%)
- Midterm (30%)
- Final Term (50%)

Laboratory (100%)

- Labs
- Open-Ended Labs

Recommended Text and Reference Books:

1. Bernard Rosner, "Fundamentals of Biostatistics", 7th Edition, Brooks/Cole Cengage Learning.
2. Wayne W. Daniel, "Biostatistics: A Foundation for Analysis in the Health Sciences", 10th Edition, John Wiley & Sons, Inc
3. SPSS survival manual a step by step guide to data analysis using SPSS 4th edition by Julie Pallant.
