Data Analysis and Probability Objectives:

At the completion of this course, students will be able to:

1- Distinguish between experimental and theoretical probability.

2-Create and interpret data using various methods of displaying circle graphs, histograms, and frequency curves, and make predictions about outliers.

3-Determine possible outcomes using tree diagrams and the counting principles of permutations and combinations.

4-Express the chances of events occurring either in terms of a probability or odds.

5- Use the normal distribution and the binomial distribution including PASCAL's triangle, to determine probability of events.

6-Interpret and calculate measures of central tendency (mean, median, and mode) from data presented in a variety of forms such as charts, tables, and graphs or from data created through experimentation.

7- Interpret and calculate measures of dispersions (range and standard deviation) from data presented in a variety of forms such as charts, tables and graphs or from data created through experimentation.

8- Describe individual performances in terms of percentiles, z-scores, and t- scores.

9- Describe the role of sampling, randomness, bias, and sample size in data collection and   interpretation.

10- Explain and illustrate the use and misuse of statistics.

11-Test the validity of hypothesis using appropriate statistical concepts

12- Determine the correlation values for given data or for data generated by students and use the results to describe the association of the variables within the given data. Identify whether this association is systematic or predictable.

13- Calculate the Chi-Square values for a given population.

14- Perform a t-test for a designated set of data, and use the results to test the validity of a hypothesis.

15- Perform a regression analysis on a set of data, either given or created through experimentation, and use the results to predict specific values of a variable. Identify the regression equation.

16- Perform an analysis of variance (ANOVA) and interpret the results.