Probability and Statistics   3 Credit Hours

Objectives
This course is aimed to introduce the concept of statistics, randomness and probability and build on these concepts to develop tools and techniques to work with random variables. The following topics will be covered in this course: Introduction to Statistics, Descriptive Statistics, Statistics in decision making, Graphical representation of Data Stem-and Lead plot, Box- Cox plots, Histograms and Ogive, measures of central tendencies, dispersion for grouped and ungrouped Data, Moments of frequency distribution; examples with real life, use of Elementary statistical packages for explanatory Data analysis. Counting techniques, definition of probability with classical and relative frequency, subjective approaches, sample space, events, laws of probability. General Probability Distributions, Conditional probability, Bayes theorem with application to Random variable (Discrete and continuous) Binomial, Poisson, Geometric, Negative Binomial Distributions, Exponential Gamma and Normal distributions, Regression and Correlation.

Prerequisites
None

Text Book
Walpole, *Introduction to Statistics*, Prentice Hall, 3rd Edition

Reference Material:
- Walpole, Probability & Statistics for Engineers & Scientists (8th Edition) 8th Edition
- G. Cowan G, *Statistical Data Analysis*, Clarendon, Oxford, 1998,ISBN13: 9780198501558
- Mariano R, *Advances in Statistical Analysis and Statistical Computing III*, JAI Press, Greenwich, Conn, 1993