INF 112: MATHEMATICS FOR COMPUTING II

Course Outline

1. General introduction: definition of statistics, mathematics required for statistics.
2. Characteristics of the data: measurement scales, types of data, accuracy and precision in statistics.
3. Population, samples, and statistics: population and sample, parameter and statistic, estimation and hypothesis testing, parametric and non parametric statistics, sampling techniques.
4. Organizing data into summary tables: Arrays and ranges, distribution tables.
5. Graphing of Data: bar chart, pie chart, line graph, histograms, polygons, ogives, stem and leaf display
6. Measures of central tendency and location: mean (arithmetic, geometric, harmonic, weighted), median and mode.
7. Measure of dispersion: deviations (mean, standard, quartile), variance, coefficient of variation.
8. Probability theory: classical, relative frequency, set theory, and subjective interpretation of probability, set, sample spaces, events.
9. Calculating rules and counting: conditional and marginal probabilities, rules of probability, Bayes theorem and tree diagram
10. Random variables: Discrete and continuous random variables, mean and variance and random variables. Probability density function, probability mass function.

Main Resource

1. Stephen Bernstein and Ruth Bernstein, Element of Statistics, Descriptive Statistics and Probability, McGraw-Hill, 1999.