

Statistics and Probability (Math-2103)

1. Introduction

- Defining statistics
- Meaning of variables, data & types of data
- Population and sample
- Statistic (static) and parameter
- Objective of learning statistics

2. Summarizing Data

- Frequency distribution
- Bar diagram
- Pie chart
- Histogram
- Frequency polygon
- Cumulative frequency polygon (ogive curve)

3. Descriptive Statistics

- a. Measures of location (Central Tendency)
 - Mean (Arithmetic, Geometric and harmonic mean)
 - Median
 - Quartiles, Deciles and Percentile
 - Mode
- b. Measures of variability (Dispersion)
 - Meaning of dispersion
 - Range and Inter quartile range (IQR)
 - Mean deviation
 - Variance and standard deviation
 - Moments, Skewness and Kurtosis

4. Simple regression and correlation

- Introduction
- Scatter Diagram and simple correlation
- The least square method
- Coefficient of determination*
- Rank correlation *

----- Mid Term -----

5. Probability

- Simple probability
- Independent and mutually exclusive event
- Addition and multiplication rule
- Conditional probability
- Bayes' theorem

6. Probability Distribution

- Introduction
- Binomial Distribution
- Hypergeometric Distribution*
- Poisson Distribution
- Normal Distribution
- Normal as an approximation to Binomial and Poisson
- Discrete and Continuous uniform distribution
- Geometric Distribution*
- Exponential and Gamma Distribution*

7. Random variables and its probability distribution

- Discrete random variables
- Expectation and variance
- Linear combination of random variables
- Continuous random variables
- Expectation and variance
- Finding median, mode and other percentile

8. Hypothesis test and Confidence interval

* Could be omitted