

**STATISTICS FOR MANAGEMENT**  
**(IMB– 203)**

1. **Analysis of Time Series:** Objective of time series analysis; Causes of variations in time series data; Components of a time series; Decomposition – Additive and Multiplicative Models; Determination of trend – Moving averages method and method of least squares; Measurement of secular trend; Seasonal variations; Measurement of cyclical variations; Measurement of random variations.
2. **Index Numbers:** Definition, characteristic and uses of index numbers; Methods of constructing price and quantity indices (simple and aggregate); Value index; Comparison of Laspeyres' and Paasche's Index Numbers; Tests of adequacy; Chain-base index numbers; Base shifting, splicing and deflating; Consumer Price Index Numbers; Problems in the construction of index numbers.
3. **Theory of Probability:** Probability as a concept; Basic probability rules; Tree diagrams; Conditional probability; Mutually exclusive events and independent events; Bayes' Theorem or Inverse probability rule; **Probability Distributions:** What is Probability distribution? Random Variables Use of Expected value in decision making, The Binomial distribution, The Poisson distribution Normal distribution: a distribution of a continuous random Variable, Choosing the correct probability distribution
4. **Sampling and Sampling Distributions:** Sampling versus complete enumeration; Random and nonrandom sampling; Different types of random sampling; Sample Statistic and Population Parameter; Practical methods of drawing a random sample. Sampling distributions – Standard error; sampling distribution of the sample mean and the sample proportion. Sampling from normal and non-normal populations; The Central Limit Theorem. Four Basic Distributions: Standard normal distribution; Chi-square distribution; t- distribution; F-distribution.
5. **Estimation:** Point and interval estimation; Criteria of a good estimator; Methods of Point Estimation – The Method of Maximum Likelihood and The Method of Moments; Interval Estimates – Interval estimates and confidence intervals; confidence level and confidence interval; Calculating interval estimates of the mean and proportion from large samples; Finite correction factor. Interval estimates using the t distribution determining the sample size in Estimation.

**Books:**

1. Business Statistics, Patri and Patri, Kalyani
2. Statistics-Theory and Practice, Pillai and Bhagavati, S.Chand
3. Business Statistics , Sharma & Khatua, Pearson