

**GUJARAT
UNIVERSITY
SYLLABUS FOR S.Y
BBA SEMESTER III**

CORE COURSE – 206 ELEMENTARY STATISTICS

Introduction:

The student will understand the basic statistical concepts and terminology involved in Probability, Correlation & Regression, Probability Distribution and Statistical Quality Control. The course focuses on how to interpret and solve business-related word problems and to develop simple Statistical models from a business perspective.

Objective:

To create a better understanding of Statistical concepts in solving business and commerce related problems. The course serves as a good foundation for further study in management, accounting marketing and finance.

Number of credits: 3

Lectures per week: 3 of one hour

each Total sessions: 40

Unit	Weightage
Unit I	25%
Unit II	25%
Unit III	25%
Unit IV	25%
Total	100%

Unit I: 10 Sessions

1.Probability

Basic Concepts : Random Experiment , Events , Sample Space, Mutually Exclusive Events, Equally Likely Events, Independent Events , Dependent

Events

Definition of probability of an Event, Statistical or Empirical definition of probability, Axiomatic or Modern approach to probability

Conditional Probability

Addition and Multiplication Rules of Probability (without proof)

Baye's Rule (without proof)

Applications

2. Mathematical Expectation

Definition of Random Variable

Discrete Random Variables and Continuous Random Variables

Meaning of Probability Distribution

Discrete Probability Distributions

Probability Mass Function

Expected Value of Discrete Random Variable and its properties (without proof)

Variance of Discrete Random Variable and its properties (without proof)

Application

Unit II: 10 Sessions

Probability Distributions: Discrete

Binomial Distribution: Necessary conditions, Binomial Distribution Function and

its properties, Applications

Poisson Distribution: Necessary conditions, Poisson Distribution Function and

its properties, Applications

Hyper Geometric Distribution: Necessary conditions, Hyper

Geometric Distribution Function and its properties, Applications.

Unit III: 10 Sessions

1. Correlation

Definition, Meaning and interpretation, Properties, Importance of correlation
Correlation Coefficient

Types of Correlation

Scatter Diagram Method and its limitations

Karl Pearson's Product Moment Method : Assumptions, Merits and Demerits

Spearman's Rank Correlation and its uses

Coefficient of Determination and its interpretation

Probable Error

Applications

2. Regression

Meaning and importance of regression

Regression Lines and Regression Coefficients, properties and their uses

Equations of Regression Lines

Difference between Regression & Correlation

Applications

3. Multiple-Partial Correlation and Regression

Introduction

Multiple correlation: meaning, multiple correlation coefficients
Partial correlation: meaning, multiple correlation coefficients
Multiple Regression Equation of three variables only
Applications

Unit IV: 10 Sessions

1. Statistical Quality Control (SOC)

Concepts of Quality, Quality Control and Statistical Quality Control
Causes of Variation in Quality
Meaning, uses and advantages of SQC
Theory of Control Charts, Theory of Runs
3 σ control limits and Revised Control Limits
Types of Control Charts
Control Charts for Variables ($\bar{X}$ and R Charts) and their interpretations
Control Charts for Attributes (p , np and C Charts) and their interpretations

2. Acceptance Sampling

Acceptance Sampling: Meaning and advantages
Single Sampling Plan (SSP) : Concept, Advantages and disadvantages, AQL, LTPD, Producer's risk, Consumer's risk, OC function and OC curve, AOQ, ATI, ASN, Applications
Double Sampling Plan: Meaning

Assignments:

1. Assignments on Probability and Mathematical Expectation
2. Assignments on Correlation, Regression and Multiple-Partial correlation and regression .
3. Assignments on Probability Discrete Distribution .
4. Assignments on SQC and Acceptance Sampling

Seminar Topics:

1. Prepare a project on application of simple and multiple correlation and regression in real life
2. Prepare a project on application of probability and mathematical expectation in real life

Reference Books:

1. Fundamental Mathematical Statistics by S. C. Gupta & V. K. Kapoor
2. Statistical Methods by S. P. Gupta
3. Statistical Methods by P. N. Arora, Sumeet Arora & S. Arora
4. Business Statistics by J. K. Sharma
5. Statistics for Management by Levin & Rubin Statistics for Business and Economics by Anderson, Sweeney & Williams