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

# CORE COURSE – 210 BUSINESS STATISTICS

**Introduction:**

The student will understand the basic statistical concepts and terminology involved in sampling methods, normal distribution, statistical inference. 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.

**Total Hours : 40**

**Number of credits: 3**

**Lectures per week: 3 of one hour each**

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

**Unit I: 10 Sessions**

1. **Sampling Methods**
   1. Basic concepts of Population and Sample
   2. Population inquiry, Sample Inquiry
   3. Characteristics of a good sample
   4. Sampling: Meaning, Merits and Demerits of Sampling
   5. Types of Sampling
      1. Simple Random sampling (with and without replacement method): Sampling Method, properties, advantages and disadvantages
      2. Stratified Random Sampling: Sampling Method, properties, advantages and disadvantages, determination of sample size under proportional allocation and optimum allocation
2. **Normal Distribution**
   1. Continuous Probability Distribution, Probability Density Function
   2. Normal Distribution: Necessary conditions, Normal Distribution Function and its properties, Applications

**Unit II: 10 Sessions**

1. **Testing of Hypothesis: Large Sample Tests** 
   1. Basic concepts: Hypothesis, Null Hypothesis, Alternative Hypothesis, Statistic, Parameter, Sampling Distribution, Standard Error, Type I and Type II errors, Level of Significance, Acceptance Region, Critical Region
   2. Testing of Hypothesis, Testing Procedure
   3. Large Sample Tests
2. Test for Variables: Test of mean, Test of difference between two means, Test of difference between two standard deviations
3. Test for Attributes: Test of proportion, Test of difference between two proportions
   1. Estimation of Confidence Interval and Determination of optimum sample size

**Unit III: 10 Sessions**

1. **Testing of Hypothesis: Small Sample Tests**
   1. , Degree of Freedom
   2. t Test: Test of Mean, Test of difference between two means, Paired t test
   3. F Test : Test of difference between two variances, Application of F test in ANOVA (One way and Two way)

**Unit IV: 10 Sessions**

1. **Chi Square Test**
   1. Test of Independence
   2. Test of Goodness of Fit
   3. Test for Population Variance
2. **Non Parametric Test**
   1. advantages and disadvantages of non-parametric tests
   2. Uses of non-parametric tests
3. Types of non-parametric tests
4. The one sample Sign test
5. The one sample Runs Test
6. Mann-Whitney U Test

**Assignments:**

1. Assignments on Decision theory and sampling methods
2. Assignments on Normal Distribution and Large Sample Tests
3. Assignments on Small Sample Tests
4. Assignments on Chi Square Test and Non-Parametric Tests

**Seminar Topics:**

1. Prepare a project on application large and small sample tests in real life
2. Prepare a project on application of chi square test and non-parametric tests in real life

**Reference Books:**

1. Fundamental Mathematical Statistics by S. C. Gupta & V. K. Kapoor
2. Statistical Methods by S. P. Gupta
3. Comprehensive Statistical Methods by P. N. Arora, Sumeet Arora & S.

Arora

1. Business Statistics by J. K. Sharma
2. Statistics for Management by Levin & Rubin
3. Statistics for Business and Economics by Anderson, Sweeney & Williams