



# GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Master of Business Administration, 1<sup>st</sup> Semester

Subject Name: Business Statistics (BS)

Subject Code: 4519207

With effective  
from academic  
year 2018-19

## 1. Learning Outcome:

Learning Outcome Component	Learning Outcome (Learner will be able to)
Business Environment and Domain Knowledge (BEDK)	<ul style="list-style-type: none"> <li>• <i>Inculcate</i> statistical thinking for business decision-making under uncertainty.</li> </ul>
Critical thinking, Business Analysis, Problem Solving and Innovative Solutions (CBPI)	<ul style="list-style-type: none"> <li>• <i>Determine</i> appropriate statistical tools / techniques to evaluate business information.</li> </ul>
Global Exposure and Cross-Cultural Understanding (GECCU)	<ul style="list-style-type: none"> <li>• <i>Analyze</i> data and information with the use of globally accepted basic tools/techniques and derive solutions for appropriate business problems.</li> </ul>
Social Responsiveness and Ethics (SRE)	<ul style="list-style-type: none"> <li>• <i>Appraise</i> the ethicality of the inferences drawn from the results of the statistical tools or techniques.</li> </ul>
Effective Communication (EC)	<ul style="list-style-type: none"> <li>• <i>Propose</i> and <i>justify</i> decisions to stakeholders based on results of rational statistical analyses.</li> </ul>
Leadership and Teamwork (LT)	<ul style="list-style-type: none"> <li>• <i>Enhance</i> team's comprehension of statistically powered decision making.</li> </ul>

2. **Course Duration:** The course duration is of **40 sessions of 60 minutes each.**

## 3. Course Contents:

Module No:	Module Content	No. of Sessions	70 Marks (External Evaluation)
I	<p><b>Introduction to Business Statistics:</b></p> <ul style="list-style-type: none"> <li>• Introduction to Statistics, Statistics in Business, Types of data – Nominal, Ordinal, Interval, Ratio.</li> <li>• Types of variables – Dependent, independent, moderating, intervening, extraneous. Discrete / continuous.</li> <li>• Charts and Graphs.</li> </ul> <p><b>Descriptive Statistics:</b></p> <ul style="list-style-type: none"> <li>• Measure of central tendency – mean, median, quartile, mode (for Group and ungrouped data)</li> <li>• Measure of variability – Range, interquartile range, standard deviation, variance, coefficient of variation, (for Group and ungrouped data)</li> <li>• Measures of shape – kurtosis, skewness, boxplot.</li> </ul> <p><b>Probability:</b></p> <ul style="list-style-type: none"> <li>• Introduction to probability</li> <li>• Theories of probability – Classical, Relative frequency and subjective.</li> <li>• Laws of probability – addition, multiplication.</li> <li>• Inverse Probability.</li> <li>• Revision of probability: BAYES' RULE</li> </ul>	10	17
II	<p><b>Probability Distribution:</b></p> <ul style="list-style-type: none"> <li>• Discrete distribution – Binomial, Poisson.</li> </ul>	10	17



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	<ul style="list-style-type: none"> <li>Continuous distribution – Uniform, normal.</li> </ul> <p><b>Hypothesis testing:</b></p> <ul style="list-style-type: none"> <li>Types of hypothesis – research, statistical, substantive.</li> <li>Null and alternative hypothesis.</li> <li>One-tailed &amp; Two-tailed test.</li> <li>Types of Error – Type I &amp; Type II.</li> <li>Level of significance.</li> <li>Steps of hypothesis testing.</li> </ul>		
III	<p><b>Parametric Tests:</b></p> <p><u>Uni-variate tests:</u></p> <ul style="list-style-type: none"> <li>z-test, T-test, Levene's F-test</li> </ul> <p><u>Bi-variate tests:</u></p> <ul style="list-style-type: none"> <li>T-test – Paired and independent, Pearson's Correlation, Simple Linear Regression, One Way ANOVA</li> </ul>	10	18
IV	<p><b>Non-Parametric Tests:</b></p> <p><u>Uni-variate tests:</u></p> <ul style="list-style-type: none"> <li>Chi-square goodness of fit for uniform distribution</li> </ul> <p><u>Bi-variate tests:</u></p> <ul style="list-style-type: none"> <li>Spearman's Rank Correlation, Mann-Whitney U test, Wilcoxon Sign Paired Rank Test, Chi-square test of independence</li> </ul> <p><u>Multivariate:</u></p> <ul style="list-style-type: none"> <li>Kruskal-Wallis, Friedman's test</li> </ul> <p><b>Multivariate analysis:</b></p> <ul style="list-style-type: none"> <li>Overview of Multiple Regression, Factor Analysis, Multidimensional scaling, Discriminant analysis. ( theoretical concepts only)</li> </ul>	10	18
V	<p><b>Practical:</b></p> <p>Students should apply the statistical hypothesis testing on assumed/hypothesized data using statistical software.</p>	---	(30 marks CEC)

#### 4. Pedagogy:

- ICT enabled Classroom teaching
- Case study
- Practical / live assignment
- Interactive class room discussions

#### 5. Evaluation:

Students shall be evaluated on the following components:

A	<b>Internal Evaluation</b>	<b>(Internal Assessment- 50 Marks)</b>
	<ul style="list-style-type: none"> <li>Continuous Evaluation Component</li> </ul>	30 marks
	<ul style="list-style-type: none"> <li>Class Presence &amp; Participation</li> <li>Quiz</li> </ul>	10 marks 10 marks
B	<b>Mid-Semester examination</b>	<b>(Internal Assessment-30 Marks)</b>
C	<b>End –Semester Examination</b>	<b>(External Assessment-70 Marks)</b>



**6. Reference Books:**

No.	Author	Name of the Book	Publisher	Year of Publication / Edition
1	Ken Black	Business Statistics for Contemporary Decision making	Wiley	Latest Edition
2	Sanjiv Jaggia, Alison Kelly	Business Statistics	McGraw Hill	Latest Edition
3	Richard I. Levin and David S. Rubin	Statistics for Management	Pearson	Latest Edition
4	D. P. Apte	Statistics for Managers	Excel	Latest Edition
5	Gerald Keller & Hitesh Arora	Business Statistics	Cengage	Latest Edition
6	Joseph Francis	Business Statistics	Cengage	Latest Edition
7	T N Srivastava and Shailaja Rego	Statistics for Management	TMH	Latest Edition
8	K. B. Akhilesh & S. B. Balasubrahmanyam	Mathematics and Statistics for Management	Vikas	Latest Edition
9	Naval Bajpai	Business Statistics	Pearson	Latest Edition
10	D. P. Apte	M. S. Excel: Statistical Tools for Managers	Excel	Latest Edition
11	Qazi Zameerudin, Vijay K. Khara, S. K. Bhamri	Business Mathematics	Vikas	Latest Edition

**Note:** Wherever the standard books are not available for the topic appropriate print and online resources, journals and books published by different authors may be prescribed.

**7. List of Journals/Periodicals/Magazines/Newspapers / Web resources, etc.**

1. Journal of Indian Business Research
2. International Journal of Statistics and Analysis
3. Sankhya – Indian Journal of Statistics
4. Economic Times
5. Financial Express
6. Business Standard
7. Economic & Political Weekly
8. Vikalpa