



GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Master of Business Administration, 1st 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"> • <i>Explain</i> basic statistical concepts such as statistical collection, species characteristics, statistical series, tabular and graphical representation of data, measures of central tendency, dispersion and asymmetry, correlation and regression analysis, time series analysis. • <i>Assess</i> the applicability of statistical tools and techniques for solving business problems.
Critical thinking, Business Analysis, Problem Solving and Innovative Solutions (CBPI)	<ul style="list-style-type: none"> • <i>Identify</i> relevant quantitative techniques which are best suited to solve a particular management problem or answer a particular research question.
Global Exposure and Cross-Cultural Understanding (GECCU)	<ul style="list-style-type: none"> • <i>Analyze</i> data and information with the use of globally accepted basic tools/techniques and derive solutions for appropriate business problems.
Social Responsiveness and Ethics (SRE)	<ul style="list-style-type: none"> • <i>Appraise</i> the ethicality of the inferences drawn from the results of the statistical tools or techniques.
Effective Communication (EC)	<ul style="list-style-type: none"> • <i>Interpret</i> the results of quantitative analysis and <i>justify</i> the analytical conclusions in written and visual formats.
Leadership and Teamwork (LT)	<ul style="list-style-type: none"> • <i>Discuss</i> and <i>undertake</i> the various stages of a statistical investigation, beginning with the design of a study to the analysis and presentation of results.

LO – PO Mapping: Correlation Levels:

1 = Slight (Low); 2 = Moderate (Medium); 3 = Substantial (High), “-“= no correlation

Sub. Code: 4519207	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
LO1: <i>Explain</i> basic statistical concepts such as statistical collection, species characteristics, statistical series, tabular and graphical representation of data, measures of central tendency, dispersion and asymmetry, correlation and regression analysis, time series analysis.	3	-	1	3	1	-	-	-	2
LO2: <i>Assess</i> the applicability of statistical tools and techniques for solving business problems.	3	3	1	1	2	1	-	2	3
LO3: <i>Identify</i> relevant quantitative techniques which are best suited to solve a particular management problem or answer a particular research question.	2	3	2	-	1	1	-	1	1
LO4: <i>Analyze</i> data and	2	2	2	-	3	-	-	1	1



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information with the use of globally accepted basic tools/techniques and derive solutions for appropriate business problems.									
LO5: <i>Appraise</i> the ethicality of the inferences drawn from the results of the statistical tools or techniques.	1	-	1	1	1	-	3	1	1
LO6: <i>Interpret</i> the results of quantitative analysis and <i>justify</i> the analytical conclusions in written and visual formats.	2	-	3	3	-	-	-	1	1
LO7: <i>Discuss</i> and <i>undertake</i> the various stages of a statistical investigation, beginning with the design of a study to the analysis and presentation of results.	1	1	3	3	-	3	1	1	1

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

3. Course Contents:

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



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II	<p>Probability Distribution:</p> <ul style="list-style-type: none"> Discrete distribution – Binomial, Poisson. Continuous distribution – Uniform, normal. <p>Hypothesis testing:</p> <ul style="list-style-type: none"> Types of hypothesis – research, statistical, substantive. Null and alternative hypothesis. One-tailed & Two-tailed test. Types of Error – Type I & Type II. Level of significance. Steps of hypothesis testing. 	10	17
III	<p>Parametric Tests:</p> <p><u>Uni-variate tests:</u></p> <ul style="list-style-type: none"> z-test, T-test, Levene's F-test <p><u>Bi-variate tests:</u></p> <ul style="list-style-type: none"> T-test – Paired and independent, Pearson's Correlation, Simple Linear Regression, One Way ANOVA 	10	18
IV	<p>Non-Parametric Tests:</p> <p><u>Uni-variate tests:</u></p> <ul style="list-style-type: none"> Chi-square goodness of fit for uniform distribution <p><u>Bi-variate tests:</u></p> <ul style="list-style-type: none"> Spearman's Rank Correlation, Mann-Whitney U test, Wilcoxon Sign Paired Rank Test, Chi-square test of independence <p><u>Multivariate:</u></p> <ul style="list-style-type: none"> Kruskal-Wallis, Friedman's test <p>Multivariate analysis:</p> <ul style="list-style-type: none"> Overview of Multiple Regression, Factor Analysis, Multidimensional scaling, Discriminant analysis. (theoretical concepts only) 	10	18
V	<p>Practical:</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	Internal Evaluation	(Internal Assessment- 50 Marks)
	<ul style="list-style-type: none"> Continuous Evaluation Component 	30 marks
	<ul style="list-style-type: none"> Class Presence & Participation Quiz 	10 marks 10 marks
B	Mid-Semester examination	(Internal Assessment-30 Marks)
C	End –Semester Examination	(External Assessment-70 Marks)



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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