GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Master of Business Administration, 1st Semester
Subject Name: Business Statistics
Subject Code: 1519504

1. Learning Outcome:

Learning Outcome Component	Learning Outcome (Learner will be able to)
Business Environment and Domain Knowledge (BEDK)	• *Inculcate* statistical thinking for business decision-making under uncertainty.
Critical thinking, Business Analysis, Problem Solving and Innovative Solutions (CBPI)	• *Determine* appropriate statisticaltools / techniquestoevaluate business information.
Global Exposure and Cross-Cultural Understanding (GECCU)	• *Analyze* data and information with the use of globally accepted basic tools/techniques and derive solutions for appropriate business problems.
Social Responsiveness and Ethics (SRE)	• *Appraise* the ethicality of the inferences drawn from the results of the statistical tools or techniques.
Effective Communication (EC)	• *Propose* and *justify* decisions to stakeholders based on results of rational statistical analyses.
Leadership and Teamwork (LT)	• *Enhance* team's comprehension of statistically powered decision making.

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	**Introduction to Business Statistics:** • 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. **Descriptive Statistics**: • 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. **Probability:** • 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
II	**Probability Distribution:** • Discrete distribution – Binomial, Poisson.	10	17

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With effective from academic year 2020-21

	• Continuous distribution – Uniform, normal. **Hypothesis testing:** • 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.		
III	**Parametric Tests:** *Uni-variate tests:* • z-test, T-test, Levene's F-test *Bi-variate tests:* • T-test – Paired and independent, Pearson's Correlation, Simple Linear Regression, One Way ANOVA	10	18
IV	**Non-Parametric Tests:** *Uni-variate tests:* • Chi-square goodness of fit for uniform distribution *Bi-variate tests:* • Spearman's Rank Correlation, Mann-Whitney U test, Wilcoxon Sign Paired Rank Test, Chi-square test of independence *Multivariate:* • Kruskal-Wallis, Friedman's test **Multivariate analysis:** • Overview of Multiple Regression, Factor Analysis, Multidimensional scaling, Discriminant analysis. (**theoretical concepts only**)	10	18
V	**Practical:** Students should apply the statistical hypothesis testing on assumed/hypothesized data using statistical software.	---	(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:

	Internal Evaluation	(Internal Assessment- 50 Marks)
A	• Continuous Evaluation Component	30 marks
	• Class Presence & Participation	10 marks
	• Quiz	10 marks
B	**Mid-Semester examination**	**(Internal Assessment-30 Marks)**
C	**End –Semester Examination**	**(External Assessment-70 Marks)**

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