

As Per NEP 2020

University of Mumbai



Syllabus for Basket of OE

Board of Studies in Statistics

UG First Year Programme

Semester - II

Title of Paper

Credits 2

I) Introduction to Business
Statistics-II

2 credit

II)

III)

From the Academic Year

2024-25

Semester-II
Open Elective-III

Name of the Course: Introduction to Business Statistics-II

Sr.No.	Heading	Particulars
1	Description the course: Including but not limited to: Introduction: Business Statistics is a course that focuses on applying statistical methods to analyze and interpret data in the context of business decision-making. It covers various statistical techniques and tools used to collect, organize, analyze, and present data. Relevance and Usefulness: • Business Statistics equips learner with the skills to extract meaningful information from data, helping businesses to optimize their strategies and operations. • Business statistics are used for workforce planning, performance evaluation, employee satisfaction surveys. • Business statistics is essential for policy-making, public administration, and assessing the effectiveness of government programs and initiatives. • It helps in identifying and quantifying risks and significant association and trends. • It helps in market research and forecasting. • It helps learner to evaluate performance measures such as sales figures, customer satisfaction scores, and financial ratios. • It is used customer segmentation, sales forecasting, inventory management, and pricing optimization. Application and Demand: • Finance and Banking: Risk assessment, investment analysis, and portfolio management. • Marketing and Advertising: Market research, consumer behaviour analysis. • Business statistics are used improve product quality, minimize defects, and optimize manufacturing processes. • It is used in Inventory optimization, production forecasting, and quality control. • Healthcare: Clinical trials, patient outcomes analysis, and resource allocation. • Technology: User behaviour analysis, product performance evaluation, and predictive analytics. Job Prospects: Business Statistics are in high demand across various job roles such as Data Analyst, Business Analyst, Market Research Analyst, Financial	

	Analyst, Operations Manager, Risk Analyst, Statistician, Management Consultant Connection with Other Courses: Business statistics relates to other courses like Economics, Mathematics, Computer Science, Business Management, medical science and technology. Additional Areas : Business Statistics plays a crucial role in Analysing environmental data, monitor pollution levels, assess climate change impacts, and develop sustainable practices. In sports, statistics are employed for performance analysis, player evaluation and game strategy optimization,	
2	Vertical:	Open Elective
3	Type:	Theory
4	Credits:	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	Hours Allotted:	30 Hours
6	Marks Allotted:	50 Marks
7	Theory (2 Credit) Total No of Theory Hours: 30 Total Marks : 50 Course Objectives (CO): (List the course objectives) 1. To know linear relationship between variables by means of correlation. 2. To know how to measure the strengths of correlations. 3. To identify the possible relationship between two continuous variables from a scatter plot 4. To identify which variable is the response variable in a regression analysis 5. To learn how to fit a curve to the given data. 6. To learn time series data and its components and methods of obtaining trends. 7. To understand index number and its use	
8	Course Outcomes (OC): (List the course outcomes) 1. Learners will able to check whether the variables in the data are correlated or not. 2. Learners will able to discover the regression equation between correlated variables. 3. Learners will able to determine the best fit curve equation or model for the variables under study in the data. 4. They will know how to determine trends for time series data 5. They will understand the concept the use of index number and how various indices are obtained for the variable understudy.	

Module 1:	Correlation and Regression Analysis	15 hrs
1.1	Correlation: Bivariate data, Scatter diagram, Covariance between two variables, Product Moment correlation coefficient and its properties,	5
1.2	Spearman's Rank correlation. (with and without ties)	2
1.3	Regression: Concept of linear regression analysis, Fitting of a linear regression line by method of least squares. Relation between regression coefficients and correlation coefficients, Coefficient of determination.	8
Module 2:	Time Series and Index Number	15 hrs
2.1	Definition of time series, Components of time series, Models of time series. Estimation of trend by i) Freehand curve method ii) Method of least squares (linear and parabolic trend).	5
2.2	Index number as a comparative tool, Stages in the construction of Index Numbers, Simple and composite Index Numbers, methods of computing composite index numbers, Some standard index numbers -	5
2.3	Laspeyres', Paasche's, Marshal-Edgeworth's, Dorbisch-Bowley's and Fisher's Index Numbers. Fixed base Index Numbers. Cost of Living Index Number, Concept of Real Income based on the Wholesale Price Index Number.	5

9	Reference Books: 1. Gupta and Kapoor: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi, Tenth Edition. (2000) 2. Kothari C.R.: Research Methodology, Wiley Eastern Limited, Second Edition. (2004) 3. Goon A.M., Gupta M.K., Dasgupta B.: Fundamentals of Statistics, Volume II: The World Press Private Limited, Calcutta. (1968) 4. Gupta and Kapoor: Fundamentals of Applied Statistics, Sultan Chand & Sons, New Delhi, Fourth Edition. (2007)
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Format of Question Paper:

Internal Continuous Assessment: (20 marks)

Assignment/viva Quizzes, Class Tests, presentation, project, assignment etc	Class Test	Total
05	15	20

Semester End Examination: (30 marks)

Semester End Examination will be of 30 marks of 01 hour duration covering entire syllabus of the semester. All questions are Compulsory.

Theory Question Paper Pattern:

Semester End Examination will be of 30 marks of 01 hour duration covering entire syllabus of the semester. All questions are Compulsory.

Theory Question Paper Pattern:

Q 1	Attempt any one question out of two questions (Module I and II)	Max. marks: 10
Q 2	Attempt any two questions out of three questions (Module I)	Max. marks: 10
Q 3	Attempt any two questions out of three questions (Module II)	Max. marks: 10

**Sign of the BOS
Chairman
Dr. Santosh Gite
Board of Studies in
Statistics**

**Sign of the
Offg. Associate Dean
Dr. Madhav R. Rajwade
Faculty of Science &
Technology**

**Sign of the
Offg. Dean
Prof. Shivram S. Garje
Faculty of Science &
Technology**