SAURASHTRA UNIVERSITY

Accredited Grade A by NAAC
(CGPA 3.05)

FACULTY OF SCIENCE

SYLLABUS FOR

Bachelor of Science

(Statistics)

(Semester- I & II)

According to Choice Based Credit System
Effective from June – 2016

B.Sc. (Statistics)
Semester-I
Paper: Statistics-101

Objective: The course aims to provide an understanding of application of statistics to business and industries while focusing to develop effective business communication skills among the students.

Key features: To make them aware about Statistical Methods application in the real life.

Course duration: Theory: 60 hours, 6 hours a week.   **Credit: 4**

Practical: 60 hours, 6 hours a week   **Credit: 3**

Unit No.	Topic	Hours	Marks
I	**Statistic-Scope, Data collection and Classification:** A)**Statistics-Scope and Limitations:** Introduction, Meaning and definition of Statistics. Origin and Growth of Statistics, Importance and Scope of Statistics, Functions of Statistics, Role of a Statistician, Limitations of Statistics, Use of Statistical tools. B)**Types of Data Collection of Data and Classification of Data:** Concept of variable and Attribute, Discrete and Continuous variable, Qualitative and Quantitative data. Concept of a Population and sample from population. Difference between Population and Sample Inquiry. Advantage of Sample Inquiry. Concept of Primary and secondary data. Methods of Primary data collection Direct and indirect inquiry, questionnaire (post and enumerations).Characteristics of an Ideal Questionnaire. Sources of Secondary data and Precautions while using of secondary data. Difference between Primary and Secondary data. Introduction of Classification, Classification of Data, Requisite of a Good Classification, Purpose of Classification, Rules of Classifying Data, Types of Classification (Chronological or Temporal, Geographical or Spatial Classification, Qualitative and Quantitative), Importance of Classification.	12	14
II	**Frequency distribution and Tabulation of Data:** Group data or Frequency distribution, Construction of Frequency Distribution, Types of Frequency distribution (Discrete, Continuous, Cumulative and Relative) Introduction of Tabulation, Functional Parts of a Statistical Table, Types of Tables (One-way, Two-way and Manifold), Requirements of a Good Table, Advantages of Tabulation.	10	14
III	**Diagrammatic and Graphic Presentation of Data:** Introduction, Types of diagram [One dimensional (Bar diagram, Multiple bar diagram, Simple divided bar diagram, Percentage diagrams), Two dimensional (Circle and Pie), Pictogram, Types of graphs of frequency distribution.	12	14
IV	**Demand and Supply:** A)**Demand and Supply function:** Formulation, their properties, total and marginal revenue, total and marginal cost, market equilibrium. Demand and Supply curve. Simple examples. B)**Elasticity:** Elasticity of demand and supply with respect to its properties. Simple examples.	10	14

V	**Fundamental of Computer System:** Introduction: Hardware, Software, Application Software, System Software, CPU, Schematic Diagram of CPU, Input-Output Devices, Peripheral Devices, Operating System, Control Panel. Topology of Computer: Bus, Ring, Mesh, Star Installations: Running Setup, Formatting Computer, Booting of Window-XP, CD/DVD writing, Create PDF file, Convert PDF file to word. **MS-Excel and its utility in Statistics-I:** Introduction, Menus and Submenus, Title Bar, Task Bar, File : New, Save, Save as, Print Edit: Cut, Copy, Paste, Paste Special Insert: Chart-Column, Bar, Line, Pie, XY-Scatter Data: Sort, Filter, Validation	16	14

B.Sc. (Statistics)
Semester-II
<u>Paper: Statistics-201</u>

Objective: The course aims to provide an understanding of application of statistics to business and industries while focusing to develop effective business communication skills among the students.

Key features: To make them aware about Statistical Methods application in the real life.

Course duration: Theory: 60 hours, 6 hours a week.   **Credit: 4**

Practical: 60 hours, 6 hours a week   **Credit: 3**

Unit No.	Topic	Hours	Marks
I	**<u>Measure of Central Tendency:</u>** Arithmetic Mean, Weighted Mean, Geometric Mean, Harmonic Mean Median, Mode, Quartiles, Deciles and Percentiles from group and ungroup data. Percentile rank. Simple examples.	11	14
II	**<u>Measure of Dispersion:</u>** Range, Quartile deviation, Mean deviation, Standard deviation, Coefficient of variance. Simple examples. Test of skewness, Types of skewness, Methods of skewness(Karl Pearson and Bowley's). Coefficient of skewness. Simple examples	11	14
III	**<u>Index number:</u>** Definition, Characteristics, Limitation and use of index numbers. Problem in the Construction of Index number, Price relative, Qualitative relative and Value relative, Construction of wholesale price index number and cost of living index numbers, Laspeyer, Passche, Dorbish and Bowley, Marshall Edge Worth, Walsch's, Kelly's and Fisher's Index number. Weighted average of relative method, Quantity or Volume index, Link and chain relations, Base shifting of Index number, Time and Factor reversal tests. Simple example	10	14
IV	**<u>Time Series and Forecasting:</u>** Meaning of time series, Utility of time series, Components of time series, Additive and multiplicative models, Determination of trend by method of moving averages and method of least squares (liner, non-linear and growth curves), Merits and demerits of methods, Measures of seasonal indices by the method of simple averages, Ratio to trend method, Moving average method and link relatives method, Merits and demerits of the methods. Exponential smoothing method. Simple example.	10	14
V	**<u>Interpolation and Extrapolation:</u>** Meaning and scope for interpolation and extrapolation. Understanding of the operator's Δ, E and *D*.Newton's methods, Lagrange's method and Binomial expansion method. Simple examples. **<u>MS-Excel and its utility in Statistics-II:</u>** Functions: MIN, MAX, FREQUENCY, SUM, AVERAGE, GEOMEAN, HARMEAN, MEDIAN, MODE, QUARTILE, PERCENTILE, AVEDEV, STDEVP, VARP, IF, COUNT, COUNTBLANK, COUNTIF, INT, ROUND, VALUE, EDATE, DAYS360, YEARFRAC, FACT, PERMON, COMBIN. Moving a data, cut the data, deleting Rows-Columns, Inserting Rows-Columns, Sorting, Automatic Filling of Entries, Custom List, Alignment, Border, Shadows, Colors, Numbers, Formatting. Statistical Data analysis using Excel (Mean, Median, Mode, Quartiles, Range, Mean Deviation, Standard deviation, Coefficient of Variance)	18	14

REFERENCE BOOKS:

1. Gupta S. C. & Kapoor V. K. : Fundamental of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
2. Gupta S. C. & Kapoor V. K. : Fundamental of Applied Statistics, Sultan Chand & Sons, New Delhi.
3. Gupta A. C. : Fundamental of Applied Statistics, Sultan Chand & Sons, New Delhi.
4. Kenny & Keeping : Mathematics of Statistics Volume I and II, Van Nostran.
5. Ken Blank : Business Statistics, Willey India (P.) Ltd., New Delhi.
6. Goon Gupta &Dasgupta: Fundamental of Statistics Volume I and II, World Press, Calcutta.
7. Speigal M. R. : Theory and Problems of Statistics, McGraw Hill Book Co., London.
8. Shenoy G. V., SrivastavaU. K. & Sharma S. C. : Business Statistics, Wiley Eastern.
9. Das G. &Pattnayk : Fundamentals of Mathematical Analysis, Tata McGraw Hill, New Delhi.
10. D. N. Elhance (1956) : Fundamentals of Statistics Kitab Mahal, Allahabad.
11. D. C. Shancheti and V. K. Kapoor: Statistics (Theory and Application), Sultan Chand & Sons Publication, New Delhi.
12. Meyer P. L. (1970): Introductory Probability and statistical application, Addission Wesley.
13. Degoot M. H.(1975): Probability and Statistics, Addission Wesley.
14. Mood A. M. Graybill F. A. and Bose D. C. (1974): Introduction to the theory of Statistics, McGraw Hill.
15. R. Pannerselvam(2008): Research Mehodology, Prentice-Hall of India P. Ltd., New Delhi.
16. Rohtagi V. K. (1986): An introduction to probability theory and Mathematical statistics, Wiley Eastern.
17. Jain D. R. & Bharat Jhunjhunwala: Business Statistics, S. Chand & Company.
18. Bharat Jhunjhunwala: Business Statistics, S. Chand & Company
19. Mahajan Kalpana K. & Mahajan Ravi K.: Fundamental Statistics in Question, Deep & Deep Publication.
20. A,B, C of Excel, B. P. B. Publication.
21. Essential Ms-Word 2000: Mamel, B. P. B. Publication.
22. Ms-Word 2000 No experience required-Davis, B. P. B. Publication.