

**Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati**

Autonomous

Course Structure for F. Y. B. Com. STATISTICS

Semester	Paper Code	Title of Paper	No. of Credits
I	COMBS1104A	Business Statistics-I	3
II	COMBS1204A	Business Statistics-II	3

Program Outcomes (POs) for B.Com. Programme

PO1	Knowledge and Critical Thinking : Acquire skills in organising, analysing, evaluating and presenting information. Able to analysis issues logically, consider different options and viewpoints, make decisions and act with flexibility, adaptability and creativity.
PO2	Communication Skill : Able to communicate effectively, analyse the concepts and participate in healthy arguments and portray skill in communication and in writing. Possess skills related with banking and other business.
PO3	Independent learning : Demonstrate the ability to acquire knowledge and business skills, the capacity for self directed activity and the ability to work independently.
PO4	Leadership quality : Exhibit qualities associated with leadership such as accountability, integrity, respect, self reflection
PO5	Teamwork : Able to work constructively, cooperatively, effectively and respectfully as part of a team.

SYLLABUS(CBCS) FOR F. Y. B. Com. STATISTICS (w.e. from June, 2019)
Academic Year 2019-2020
(2019 pattern)

Class : F.Y. B. Com. (Semester- II)

Paper Code: COMBS1204 A

Paper : I

Title of Paper: Business Statistics-II

Credit : 3 credits

No. of lectures: 48

A) Course Objectives:

Students will be able to

1. understand theory of probability and its applications in real life problems.
2. to use correlation and regression to estimate the relationship between two variables.
3. compute and interpret with various types of Index numbers.
4. handle problems involving maximize the profit and minimize the cost with linear constraints.
5. make aware the students about the applications of various forms of Linear programming problems.

B) Course Outcomes:

The students will acquire knowledge about the;

- CO1. understanding of the fundamental concepts of permutation and combinations.
- CO2. understand the difference between random and non-random experiments.
- CO3. understand the concepts of sample spaces, events and probability. Random experiment, probability.
- CO4. to compute various types of correlation and regression.
- CO5. apply correlation and regression in real life .
- CO6. judge economy with the help of Index numbers.
- CO7. handle problems involving maximizing the profit and minimizing the cost with linear constraints.
- CO8. apply the techniques of LPP to solve real world problems.

TOPICS/CONTENTS:

UNIT1: Permutations and Combinations

[4L]

Permutations of 'n' dissimilar objects taken 'r' at a time (with or without repetition)

${}^n P_r = n!/(n-r)!$ (without proof). Combinations of 'r' objects taken from 'n' objects ${}^n C_r = n!/r!(n-r)!$ (without proof) problems, Applications.

UNIT 2: Sample Space, Events and Probability**[10L]**

Experiments and random experiments. Ideas of deterministic and nondeterministic experiments. Definition of – sample space, discrete sample space, events. Types of events, Union and intersections of two or more events, mutually exclusive events. Complementary event, Exhaustive event. Simple examples, Classical definition of probability, Addition theorem of probability without proof (upto three events are expected), Definition of Conditional probability Definition of independence of two events simple numerical problems.

UNIT 3: Linear Programming Problems (LPP) (for two variables only)**[6L]**

Definition and terms in a LPP, formulation of LPP, Solution by Graphical method, problems.

UNIT 4: Correlation and Regression**[10L]**

Concept and type of correlation scatter diagram, interpretation with respect to magnitude and direction of relationship.

Karl Pearson's coefficient of correlation for ungrouped data. Spearman's rank correlation coefficient.

Concept of regression. Lines of regression for ungrouped data, predictions using lines of regression. Regression coefficients and their properties (without proof).

UNIT 5: Index numbers**[6L]**

Concept of index number, price index number, price relatives. Problems in construction of index number. Construction of price index number:

Weighted index Number, Laspeyre's, Paasche's and Fishers method. Cost of living / consumer price index number: Definition and problems in construction.

Methods of construction: Family budget and aggregate expenditure. Inflation Uses of index numbers, commonly used index numbers.

References:

- 1 Gupta S. C. and Kapoor V. K.: Fundamentals of Mathematical Statistic, Sultan Chand and Sons, 23, Daryaganj, New Delhi 110002.
- 2 Gupta S. P.: Statistical Methods, Sultan Chand and Sons, 23, Daryaganj, New Delhi 110002.
- 3 Mukhopadhyaya Parimal (1999): Applied Statistics, New Central Book Agency, Pvt. Ltd. Calcutta. 11.
- 4 Goon A. M., Gupta, M. K. and Dasgupta, B. (1986): Fundamentals of Statistics, Vol. 2, World Press, Calcutta.
- 5 Gupta S. C. and Kapoor V. K. (1987): Fundamentals of Applied Statistics, S. Chand and Sons, New Delhi.
- 6 Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye: Probability & Statistics for Engineers & Scientists.

Course Outcomes	Programme Outcomes (POs)				
	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3		
CO2	2	3	3		
CO3	3	3	3		
CO4	3	3	3		
CO5		3	3		
CO6		3	3		
CO7		3	3	2	
CO8		3	3		

Weight: 1 - Partially related 2 - Moderately Related 3 - Strongly related

Justification

PO1: Knowledge and Critical Thinking

- CO1: Understanding of permutation and combinations (3)
Justification: Permutations and combinations require critical thinking and mathematical reasoning.
- CO2: Understanding the difference between random and non-random experiments (2)
Justification: Critical thinking is involved in distinguishing between the characteristics and outcomes of different types of experiments.
- CO3: Understanding sample spaces, events, and probability (3)
Justification: Probability involves critical thinking in analyzing events and outcomes in sample spaces.
- CO4: Computing various types of correlation and regression (3)
Justification: Critical thinking is essential in understanding and applying statistical methods like correlation and regression.

PO2: Communication Skill

- All COs

Justification: Communication of mathematical concepts and problem-solving techniques is essential in conveying ideas effectively.

PO3: Independent Learning

- All COs

Justification: These concepts require self-study and practice to grasp their applications and nuances.

PO4: Leadership Quality

- CO7: Handling problems involving maximizing profit and minimizing cost with linear constraints (2)

Justification: Leadership involves decision-making in cost management and profit maximization.