Syllabus for B. Com. Semester: - II

Subject Name: - Business Mathematics and Statistics - II

Course code: - 124 (A)

Depth of the program – Basic Knowledge of Mathematics and Statistics

Objective of the Program

1. To introduce the basic concepts in Finance and Business Mathematics and Statistics
2. To familiar the students with applications of Statistics and Mathematics in Business
3. To acquaint students with some basic concepts in Statistics.
4. To learn some elementary statistical methods for analysis of data.
5. The main outcome of this course is that the students are able to analyze the data by using some elementary statistical methods

Unit No.	Unit Title	Contents	Purpose Skills to be developed
1	**Matrices and Determinants (up to order 3 only)**	Definition of a Matrix, Types of Matrices, Algebra of Matrices, Determinants, Adjoint of a Matrix, Inverse of a Matrix via Adjoint Matrix, Homogeneous System of Linear equations, Condition for Consistency of homogeneous system, Solution of Non-homogeneous System of Linear equations (not more than three variables), Applications in Business and Economics, Examples and Problems.	1. To understand the concept of matrices and determinants. 2. To understand the application of determinant in solving linear equations 3. To understand applications of matrices and determinants in business and economics.
2	**Linear Programming Problems (LPP) (for two variables only)**	Definition and terms in a LPP, formulation of LPP, Solution by Graphical method, Examples and Problems	1. To understand the concept of LPP and its application in business and decision making. 2. To understand graphical method to solve business optimization problems with two variables.
3	**Correlation and Regression**	Concept and types 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. (with tie and without tie) Concept of regression, Lines of regression for ungrouped data, predictions using lines of regression. Regression coefficients and their properties (without proof). Examples and problems.	1. To use correlation for knowing the relationship between two variables. 2. To use regression for prediction

4	**Index numbers**	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 Fisher's method. Cost of living / Consumer price index number: Definition, problems in construction of index number. Methods of construction: Family budget and aggregate expenditure. Inflation, Uses of index numbers, commonly used index numbers. Examples and problems.	1. To know different types index numbers and problems in their construction. 2. To know the applications of various index numbers.

Teaching methodology

Topic No.	Total Lectures	Innovative methods to be used	Expected Outcome
1	12	ICT	Students will be able to apply the theory of matrices to solve business and economic problems.
2	12	ICT	Students will be able represent business and economic optimization problems involving two variables as LPP and solve those problems using graphical method
3	16	ICT	Students will able to predict the type of relationship between bivariate data. Students will be able predict the value of unknown from give bivariate data.
4	08	ICT	Students will be able compute different index numbers. Students will be able to compute cost of living.

References:

Sr. No.	Title of the Book	Author/s	Publication	Place
1.	Practical Business Mathematics	S. A. Bari	New Literature Publishing Company	New Delhi
2.	Mathematics for Commerce	K. Selvakumar	Notion Press	Chennai
3.	Business Mathematics with Applications	Dinesh Khattar & S. R. Arora	S. Chand Publishing	New Delhi
4.	Business Mathematics and Statistics	N.G. Das & Dr. J.K. Das	McFraw Hill	New Delhi
5.	Fundamentals of Business Mathematics	M. K. Bhowal	Asian Books Pvt. Ltd	New Delhi
6.	Operations Research	P. K. Gupta & D. S. Hira	S. Chand Publishing	New Delhi
7.	Mathematics for Economics and Finance: Methods and Modeling	Martin Anthony and Norman Biggs	Cambridge University Press	Cambridge
8.	Financial Mathematics and Its Applications	Ahmad Nazri Wahidudin	Ventus Publishing ApS	Denmark
9.	Fundamentals of Mathematical Statistics	Gupta S. C. and Kapoor V. K.:,	Sultan Chand and Sons	23, Daryaganj, New Delhi 110002
10.	Statistical Methods	Gupta S. P.:	Sultan Chand and Sons	23, Daryaganj, New Delhi 110002
11.	Applied Statistics	Mukhopadhya Parimal	New Central Book Agency Pvt. Ltd.	Calcutta.
12.	Fundamentals of Statistics	Goon A. M., Gupta, M. K. and Dasgupta, B.	World Press	Calcutta.

13.	**Fundamentals of Applied Statistics**	**Gupta S. C. and Kapoor V. K.:,**	**Sultan Chand and Sons**	**23, Daryaganj, New Delhi 110002**

Suggested references
Web reference for Semester I & II

1. www.freestatistics.tk(National Statistical Agencies)
2. www.psychstat.smsu.edu/sbk00.htm(Onlinebook)
3. www.bmj.bmjournals.com/collections/statsbk/index.shtml
4. www.statweb.calpoly.edu/bchance/stat-stuff.html
5. www.amstat.org/publications/jse/jse-data-archive.html(International journal on teaching and learning of statistics)
6. www.amstat.org/publications/chance(Chancemagazine)
7. www.statsci.org/datasets.html(Datasets)
8. www.math.uah.edu/stat(Virtual laboratories in Statistics)
9. www.amstat.org/publications/stats(STATS : the magazine for students of Statistics)
10. www.stat.ucla.edu/cases(Case studies in Statistics).
11. www.statsoft.com
12. www.statistics.com
13. www.indiastat.com
14. www.unstat.un.org
15. www.stat.stanford.edu
16. www.statpages.net
17. www.wto.org
18. www.censusindia.gov.in
19. www.mospi.nic.in
20. www.statisticsofindia.in

******