SOLAPUR UNIVERSITY, SOLAPUR

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty:
Commerce & Management

Name of the BOS:
Business Economics

Name of the Course:
B. Com III - (Semester: V & VI)

Title of the Paper:
Advanced Statistics- Paper I & II

Syllabus Pattern:
Choice Based Credit System

With effect from:
June-2018

Programme Specific Outcomes of B.Com. (Advanced Statistics) / Preamble

PSO1. Familiarize with the basic concepts of Advanced Statistics and a hands on practice of the various advanced statistical tools and techniques.

PSO2. Enable them to improve their logical reasoning ability and interpretation of various business results.

PSO3. Acquainting students with the emerging issues in business, trade and commerce regarding analyzing business facts.

PSO4. Study and critically analyze statistical reasoning to problems of business.

PSO5. Boost quantitative thinking and develop numerical abilities.

PSO6. Enlighten abilities to apply the statistical concepts to real life problems in Commerce, Economics, Management and Social sciences.

PSO7. Improve their logical reasoning ability and interpretation of various statistical results.

PSO8. Statistical Techniques in Decision making at Strategic & Tactical Level.

Medium of instruction: **English**

Structure of the course per paper:

Course	Title	Theory Lectures Per Week	Total Periods of Teaching in a Semester	Duration Of University Exam	For University Exam		For Internal Exam		Total Marks	
					Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks
B.Com.III/ Sem-V and Sem-VI	**Advanced Statistics**	**04**	**60 (15 Weeks)**	**$2\frac{1}{2}$ Hrs**	**70**	**28**	**30**	**12**	**100**	**40**

Equivalent Subject for Old Syllabus

Name of the Old Paper	Name of the New Paper
Advanced Statistics Sem.-V, paper-I	Advanced Statistics Sem.-V, paper-I
Advanced Statistics Sem.-V, paper-II	Advanced Statistics Sem.-V, paper-II
Advanced Statistics Sem.-VI, paper-I	Advanced Statistics Sem.-VI, paper-I
Advanced Statistics Sem.-VI, paper-II	Advanced Statistics Sem.-VI, paper-II

Solapur University, Solapur
B.Com.-III (Semester V) Syllabus
Advanced Statistics- Paper I

(w. e. f. June 2018)

Course Outcomes / Objectives

CO1 **Get the knowledge of preliminaries of probability.**
CO2 **Describe the concept of probability.**
CO3 **Introduce Poisson distribution and its applications.**
CO4 **Familiarize Bivariate Probability Distribution.**
CO5 **Enable to calculate mean and variance of Bivariate discrete probability distribution.**

Syllabus

Unit No.	Topic	Subtopics	Periods
1	Probability Theory	Introduction to permutations and combinations, Binomial theorem, Probability, Conditional probability, Bays theorem. Examples.	15
2	Poisson Distribution	Probability mass function , Mean & Variance, Properties of Poisson Distribution. Conditions under which Poisson distribution is applicable. Examples.	15
3	Bivariate Probability Distribution	Meaning of bivariate random variable, concept of discrete bivariate random variable. Definition of bivariate probability mass function. Cumulative Distribution function. Examples.	15
4	Mathematical Expectation	Definition of Mathematical Expectation of Univariate & Bivariate discrete random variable X. Addition & multiplication laws of mathematical expectation for discrete random variable only. Examples based on these. Mean & Variance of discrete random variable. Conditional mean & Conditional Variance. Examples.	15

Note :

1. Use of soundless calculators are allowed.
2. More stress should be given on commercial applications

List of Reference books:

1. Fundamentals of Statistics- S. C. Gupta.
2. Business Statistics - Bharat Jhunjhunwala
3. Statistical Methods- S. P. Gupta,
4. Introduction to Statistics- C. B. Gupta.
5. Essential Statistics- A. B. Rao.
6. Statistics for all (Volume I) – S. M. Aherkar
7. StatisticsTheory,Methods and Applications- Sancheti,D.C. &Kapoor V.K
8. Business Statistics :An Applied Orientation- P.K. Viswanathan
9. Statistics and their applications to Commerce - Borddigtion
10. Business Statistics- Reddy, C.R Deep Publications, New Delhi.
10. Statistics Problems and Solutio
11. ns- Kapoor V.K.
12. Fundamentals of Statistics - Elhance.D.N
13. Statistics - Gupta B.N.
14. Practical Business Statistics - Croxton & Crowdorv.
15. Statistics Concepts & Applications- Nabendu Pal & Sahadeb Sarkar
16. Business Statistics- J.K.Sharma
17. Busniess Statistics - R.S.Bharadwa
18. Business Statestics- G V Kumbhojkar, Phadke Publications, Kolhapur

Solapur University, Solapur
B.Com.-III (Semester V) Syllabus
Advanced Statistics- Paper II

(w. e. f. June 2018)

Course Outcomes / Objectives

CO1	**Understand concept of assignment problem and its applications.**
CO2	**Acquire the knowledge of transportation problem and its solution.**
CO3	**Formulate LPP and to solve it.**
CO4	**Accomplish the allotment of jobs to machines in order to minimize the processing time.**

Syllabus

Unit No.	Topic	Subtopics	Periods
1	Assignment Problems	Assignment Problems for minimization and maximization, Mathematical formulation, Solution of AP by Hungarian algorithm. Examples.	15
2	Transportation Problems	Transportation Problems for minimization, methods of finding I.B.F.S., testing solution for optimality (Modi Method). Examples.	15
3	Linear Programming Problems	Formulation of LPP, Graphical Method, LPP with more than two variables. Use of slack, surplus and artificial variables, Solution of LPP of maximization / minimization type problems by using Simplex method and Big M method. Examples.	15
4	Sequencing	Introduction, Assumptions, problem of sequencing of n jobs through 2 machines, n jobs through 3 machines, n jobs through M machines. Examples.	15

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Reference books

1) Fundamentals of applied statistics by Gupta & Kapoor.

2) Operations research by S.D. Sharma

3) Quantitative techniques in decision making by J.K. Sharma

4) Operations research by R.K. Gupta.

5) Statistical Methods by J.Medhi

6) Fundamentals Mathematical Statistics by Gupta & Kapoor.

7) Introduction to Mathematical Statistics by D.N.Elance.

Solapur University, Solapur
B.Com.-III (Semester VI) Syllabus
Advanced Statistics- Paper I

(w. e. f. Nov 2018)

Course outcomes / Objectives

CO1 Create awareness about various measures of demographic features.

CO2 Test the significance of difference between parameter and statistic.

CO3 Test the significance of difference for large samples.

CO4 Get acquainted with the exact sampling distributions.

CO5 Test the significance of difference for small samples.

Syllabus:

Unit No.	Topic	Subtopics	Periods
1	Demography	Introduction, Measures of Mortality (CDR, SDR, STDR by Direct Method, IMR) Measures of fertility (CBR, GFR, SFR, TFR) Reproduction rates: Crude rate of Natural Increase , GRR & NRR. Examples.	15
2	Testing Of Hypothesis	Definition of parameter, statistic, hypothesis (Simple & Composite), Null & alternative hypothesis, critical region, level of significance, Type I & Type II error, power of the test (Only concepts)	15
3	Large Sample Tests	1) Test for an assumed mean. 2) Test for an assumed proportion. 3) Comparison of means of two populations. 4) Comparison of proportion of two populations. Examples.	15
4	Exact Sampling Distributions and their Applications	Definition of Chi-square, t & F variates & their p.d.fs Applications of t distribution: 1) To test $H_0 : \mu = \mu_0$ 2) To test $H_0 : \mu_1 = \mu_2$ Applications of Chi-square distribution: 1) Test of goodness of fit 2) To test independence of attributes for 2 x 2 contingency table. Applications of F distribution: To test $H_0 : \sigma_1^2 = \sigma_2^2$ Examples.	15

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Solapur University, Solapur
B.Com.-III (Semester VI) Syllabus
Advanced Statistics- Paper II

(w. e. f. Nov 2018)

Course outcomes / Objectives

CO1	**Acquaint with game theory and its solution.**
CO2	**Inform techniques used in decision making .**
CO3	**Estimate critical activities and project duration .**
CO4	**Create simulation model using random numbers.**

Syllabus:

Unit No.	Topic	Subtopics	Periods
1	**Game Theory**	**Two person zero sum games, minimax and Maximin principle, saddle point, mixed strategies, Rule of dominance, solution of 2x2 game by short cut method and graphical method. Examples.**	**15**
2	**Decision Theory**	**Decision making under certainty, Decision making under risk (EMV Criteria), EVPI,VPI Decision making under uncertainty- Laplace , Hurwicz, Alpha criteria, Maximin, minimax criteria, minimax regret criteria. Examples.**	**15**
3	**Network Analysis**	**Introduction, Network diagram, rules for constructing diagram, determination of critical path, Application of CPM and PERT techniques . Examples.**	**15**
4	**Simulation**	**Introduction , use of simulation, steps in simulation study, advantages and disadvantages of simulation, Monte Carlo Simulation method. Examples.**	**15**

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