

Gujarat University
Choice Based Credit System (CBCS)
Syllabus for B.Com Semester V (Statistics)
Effective from June 2013

CE 301 B
Statistics VII

HOURS: 3/WEEK

CREDIT: 3

EXAM HRS: 3

1. Inventory Control : [25%]

Introduction, Meaning of Inventory Control, Advantages of Carrying Inventory, Terms of Inventory Controls, Various Deterministic Inventory Models: Economic Order Quantity (EOQ) without Shortages (derivation of the model), EOQ with Shortages, EOQ with finite production rate, EOQ with Price Discounts, simple examples based on these models.

2. Queuing Theory: [25%]

Introduction, Essential features of Queuing Systems (Input source, Queue configuration, Queue discipline, Service pattern), Operating characteristics of Queuing System (Expected waiting time in queue and system, expected number of customers in queue and system, busy period of server), Probability distribution in Queuing Systems ,Queuing Models: M/M/1 with unlimited and limited queue length, simple examples based on these models.

3. Sequencing Problems: [25%]

Introduction, Notations, Terminology and Assumptions of Sequencing Problem, Processing n jobs through two machines, processing n jobs through three jobs, simple examples based on these models, simple examples based on these models.

4. Game Theory: [25%]

Introduction, Two person Zero Sum Games, Pure Strategies: Games with Saddle Point, Mixed Strategies: Games without Saddle Point, The rules of Dominance, Solution Methods of Games without Saddle Point - Algebraic Method, Graphical Method. Conversion of any game problem in to LLP form (Not solution by Simplex method), simple examples only.

Reference Books:

1. H.A.Taha, Operations. Research, Macmillan Publishing Co. Inc.
2. Vohra N.D, Quantitative Techniques in Management Tata McGraw Hill, New Delhi.
3. J.K.Sharma : O.R. Theory and Applications, Macmillan India Ltd.
4. Anderson, Sweeney, Williams, An Introduction to Management Science Quantitative Approach to Decision Making, Cengage Learning India Pvt. Ltd. New Delhi.
5. Barry Render, Ralph M. Stair , Michael E. Hanna, Quantitative Analysis for Management, Pearson Education(Singapore) Pte. Ltd.

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CE 302 B
Statistics VIII

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EXAM HRS: 3

1. Student's t Test: [25%]

Introduction to t-distribution, its probability density function (statement only), assumptions for small sample tests, applications of t-test (both one and two tailed): (1) testing mean of a small sample, (2) comparing means of two samples (independent samples), (3) paired t-test for dependent samples, simple examples based on these tests.

2. Chi-square Test: [25%]

Introduction to chi-square distribution, its probability density function (statement only), applications of chi-square test: (1) testing variance of a small sample, (2) testing independence of attributes using $m \times n$ contingency table, using the formula for 2×2 contingency table with Yate's correction (without proof), (3) testing goodness of fit (Binomial and Poisson distributions only), simple examples based on these tests.

3. Variance Ratio Test and Experimental Design: [25%]

Introduction to F-distribution, its probability density function (statement only), applications of F-test: (1) comparing variances of 2 small samples, (2) testing means of several small samples – ANOVA (one way and two way analysis). Concept of design of experiments, principles of design of experiment – randomization, replication and local control, concepts of CRD, RBD and LSD with illustrations

4. Non Parametric Tests: [25%]

Meaning - Importance of NP test, Sign test, Median test, Run test, Mann-Whitney test, Wilcoxon's test, Kruskal-Wallis test, Kolmogorov - Smirnov test (without derivation). Simple examples (table value given), simple examples based on these tests.

Reference Books:

1. Goon. Gupta, Dasgupta : "An outline of Statistical Theory" Vol-1 and II. World Press, Calcutta
2. Sancheti & Kapoor : Business Statistics. Sultan Chand & Sons, New Delhi.
3. S.C. Gupta: "Fundamentals of Mathematical Statistics" Sultan Chand & Sons, New Delhi.
4. Levin and Rubin: "Statistics for Management", Prentice Hall of India Pvt. Ltd. New Delhi.
5. Parimal Mukhopadhyay : "Mathematical Statistics" Books & Allied (P) Ltd.

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CE 303 B
Statistics IX

HOURS: 3/WEEK

CREDIT: 3

EXAM HRS: 3

Objective: Students are intended learn basic techniques of econometrics.

1. Demand Analysis & Monopoly & Duopoly Problems: [25%]

Demand and supply function, Market equilibrium, effect of taxation and subsidy, marginal and average, revenue & cost function, Discussion of monopoly problems-classical duopoly problems (idea only), Simple examples of monopoly under perfect competition, Difference between monopoly & duopoly problems

2. Partial Derivatives and its applications: [25%]

Definition of partial derivative involving two variables up to second order, Homogeneous functions, Statement of Euler's theorem (without proof) and its application to homogeneous function, Application of partial derivative to the problems related to constrained optimization problems, (Cost function and Utility function).

3. Mathematics for Finance: [25%]

Types of Interest, Nominal and Effective rates of Interest, Simple, Compound and continuous discounting, Depreciation, simple examples only Various types of Annuities, Sinking fund and simple examples related to these topics.

4. Curve Fitting: [25%]

Meaning and definition of least square principle, Fitting of linear, quadratic and exponential curves like (i) $y = ab^x$ (ii) $y = ae^{bx}$ (iii) $y = ax^b$ etc. and simple examples based on it.

Reference Books:

1. J. K. Sharma, Mathematics for Business and Economics, Asian Books Private Ltd.
2. S. C. Gupta, V. K. Kapoor, Fundamentals of Applied Statistics, Sultan Chand & sons, New Delhi.
3. David R. Anderson, Dennis J. Sweeney, Thomas A. Williams, Statistics For Business and Economics, South-Western Cengage Learning India Pvt. Ltd. New Delhi.
4. S.C. Gupta: "Fundamentals of Mathematica Statistics" S. Chand, New Delhi.
5. R. G. D. Allen, Mathematical Analysis for Ecomomists, Macmillan, New, York.

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CE 304 B
Statistics X

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EXAM HRS: 3

Objective: Student supposed to apply their theoretical knowledge to identify, analyze and solve any real life problem.

- A live project work using either primary data or secondary data should be undertaken. (Survey based project is preferred). The topics for the project are decided by the internal faculty by keeping the view that student should get an exposure to the techniques of data collection methods, statistical analysis, presenting the data and to derive proper conclusions related to the topic assignee to them in the project.
- Students can work in team of two or more. At the end, student should make a presentation and the submission of their findings of the project undertaken in dissertation form.
- For the internal marks are assigned by the internal faculty to the students on their regular follow ups, progress report and interest in the topic. The faculty is responsible to justify the marks.
- The external marks are given on the basis of presentation of the project by the students against internal and external faculties (an average of the marks assigned by both the faculties should be considered). The project dissertation carries 60% of marks and presentation carries remaining 40% of marks.