

VEER NARMAD SOUTH GUJARAT UNIVERSITY

M.Com-I.

Semester - I

Paper No : 104

ADVANCED STATISTICS - 1

(Syllabus effective from Academic Year 2010-11 onwards)

(1) Statistical Inference

(50%)

Estimation

Estimation, Different measures of closeness of an Estimation, some properties of estimators; consistency, unfussiness and efficiency Method of estimation. Maximum Likelihood estimation and it's properties (without proof). Method of maximum likelihood, method of moments, method of chi-squares. Confidence intervals. Method of finding confidence intervals, large sample confidence intervals, confidence intervals for parameter. Elementary distributions.

(2) Univariate Distributions :-

(50%)

Introduction, important properties and application of (i) Hyper Geometric distribution (ii) Negative Binomial distribution (iii) Cauchy distribution (iv) Laplace distribution (v) Log-Normal distribution.

BOOKS :

1. Johnsons, N .L. and Kotz, S. (1977) : Distribution in Statistics, John Wiley.
2. Ferguson, T.(1967) : Mathematical Statistics; Academic Press.
3. Jaiswal, M.C. (1973) : Statistics Distributions; Guj.Uni. Book Pub. Board, Ahmedabad.
4. Rohatgi, V.K (1984) : Introduction to Probability Theory and Mathematical Statistics; Wiley Eastern.
5. Gibbons, J.D. (1976) : Non-Parametric Methods for Quantitative Analysis; Holt, Rinehart and Winston.
6. Sidney Seigal (1956) : Non-Parametric Methods for Behavioral Sciences; Mac-Graw Hills.

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Paper No : 105

ADVANCED STATISTICS - 2

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Demography (1):-

(50%)

Meaning and scope of demography, history and growth of demography, uses, limitation and suggestion of vital statistics, measures of mortality rates: Crude death rate, Specific death rate, Standardized death rate, Comparison of two cities by proper mortality.

Fertility rates : Crude Birth rate (CBR), General fertility rate (GFR), Specific fertility rate (SFR), Total Fertility rates (TFR), Explanation and calculation of fertility rates.

Reproduction rates: Gross Reproduction Rate(GRR), Net Reproduction Rate (NRR), explanation and calculation of reproduction rates, Population projection - methods, importance and limitation.

Index Numbers:-

(50%)

Meaning and definition of Index numbers, uses and limitation of Index numbers, basic problem involved in construction of Index numbers. Various types of Index numbers - Simple aggregate, Weighted aggregate, Laspere's price, Paasche's price, Bowley's price, Marshall Edge worth price, Fisher's Index numbers, Measurement of price and quantity Index numbers, Time reversal and Factor reversal tests, Construction and importance of cost of living index numbers.

BOOKS :

1. Pathak, K.B. and Ram, R.(1992) : Techniques of Demographic Analysis Himalaya Pub. House, Delhi.
2. Jaiswal, M.C. (1984) : Arth Vishayak ankadashashtra (in Gujarati); University Granth Nirmal Board, Ahmedabad.
- . Srivastava, O.S. (1983) : A Texbook of Demography; Vikas Publishing House.

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Paper No : 106

ADVANCED STATISTICS - 3

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(1) Mathematical Economics : (50 %)

Nature, meaning and scope of Econometrics.

Distinction between Statistics & Econometrics.

Concept of utility function and indifference curves.

Demand, Compensated demand function.

Production function, Formulation of a production function.

Elasticity of substitution for two input factors of production, Cobb-Douglas production function, CES production function & methods of estimation of their parameters, Formulation of a consumption function, Leontief's input-output analysis, open and closed models and its importance in inter-industry relations. Cross section and time series. Estimation of their parameters.

(2) Time Series Analysis : (50 %)

Concept of Time series analysis. Fitting of curves by method of least squares. Fitting of linear equations. (Theoretically). its applications. Fitting of parabolic, $y = ab^x$, $y = ae^{bx}$ curves with application (examples). Computation of seasonal variation. Regular and irregular variations by the method Ratio to Trend, by Moving Average, Ratio to trend by straight line, by method of least squares.

BOOKS :

1. Allen R.G.D.:(1973) Mathematical Analysis for Economics.
2. Box and Jenkins.:(1970) Time Series Analysis, Holden-Day publications.
3. Jaiswal M.C.(1964) .: Artha Vishayak Ankdeshashtra (in Gujarati) Uni. Granth Nirmal Board, A'bad.
4. Handerson, M.A. & Quandt (1980).: Micro Economics Theory/Mathematical Economics, Mac-Graw Hills.

5. Gujarati D.(1979).: Basic Economics, Mac-Graw Hills.
6. Johnston J.(1982).: Econometrics method, Mac-Graw Hills and Kogakusha Ltd.
7. Ankdashashtra paper - III by Dr.D.G.Patel and others, S.G.Parthypak Mandli Ltd, Surat.

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Semester - II

Paper No:204

ADVANCED STATISTICS - 4

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(1) Testing of Hypothesis

(50%)

Statistical hypotheses, critical region, two types of errors, level of significance, power of a test, Neyman Pearson's lemma (without proof) and its applications (Binomial, Poisson, Normal and Exponential distributions). The most powerful test of a simple hypothesis against a simple alternative.

(2) Non- parametric Tests :-

(50%)

Introduction, Comparison of parametric and non-parametric tests, run test for randomness, Kolmogorov - Smirnov test of goodness of fit, extension of Median test, Kruskal - Wallis test (one way Analysis of variance), Rank correlation, Kendall's Rank correlation.

BOOKS :

1. Jaiswal, M.C. (1973) : Statistics Distributions; Guj.Uni. Book Pub. Board, Ahmedabad.
2. Rohatgi, V.K (1984) : Introduction to Probability Theory and Mathematical Statistics; Wiley Eastern.
3. Gibbons, J.D. (1976) : Non-Parametric Methods for Quantitative Analysis; Holt, Rinehart and Winston.
4. Sidney Seigal (1956) : Non-Parametric Methods for Behavioral Sciences; Mac-Graw Hills.

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Semester - II

Paper No: 205

ADVANCED STATISTICS - 5

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Demography (2):

(30%)

Life tables:- Assumptions, Constructions, uses and limitations Numerical examples to life tables. Fitting of logistic curve - Theory and examples.

Indian Official Statistics:

(40%)

Central Statistical Organization on (CSO) National Sample Survey (NSS), National Council of Applied Economics and Research, Department of Commercial Intelligence and Statistics (D.C.I.S), Indian Statistical Institution (I.S.I), Principal Publications containing data on the topics such as population, agriculture and industry.

National Income:

(30%)

Concept of National Income, Uses, methods of it's estimation, Lorenz curve and Pareto's law of Income distributions - Concepts, derivations and Applications.

BOOKS:

1. Pathak, K.B. and Ram, R.(1992) : Techniques of Demographic Analysis Himalaya Pub. House, Delhi.
2. Jaiswal, M.C. (1984) : Arth Vishayak ankadashashtra (in Gujarati); University Granth Nirmal Board, Ahmedabad.
3. Srivastava, O.S. (1983) : A Texbook of Demography; Vikas Publishing House.

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Semester - II

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ADVANCED STATISTICS - 6

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(1) Econometrics Methods : (50 %)

The nature and role of econometrics. Introduction to econometrics models :

(i) Single equation model (ii) Simultaneous equation model.

Single equation model : Ordinary least squares model. Estimation of parameters, Problem of multicollinearity. Generalized least squares model - Estimation of parameters. (Aitken's Estimator), Problem of heteroscedasticity and auto-correction, method of estimation in each case, Grouping of observations and Durbin - Watson test.

Simultaneous equation model: Problem of identification, statements and application of Rank and Order conditions. Estimation of parameters of two equations by two-stage least squares method.

Dynamic Econometrics Model : Autoregressive and distributed lag models, Koyck's approach, Partial adjustment and adaptive expectation model.

(2) Time Series Analysis : (50 %)

Concept of Time series analysis: Concept of stationary time series. Difference between cyclical and oscillatory time series. 1st order Auto regressive model and determination dispersion matrix. Second order Auto regressive series. Auto-correlation function and correlogram. Periodogram analysis. Relation between the periodogram and the correlogram. Serial correlation and serial co-efficient of correlation.

BOOKS :

1. Box and Jenkins.: (1970) Time series analysis, Holden-Day publications.
2. M.C.Jaiswal (1964) : Artha vishayak Ankasashashtra (in Gujarati), University Granth Nirmal Board, A'bad.
3. Gujarati D.(1970) : Basic Econometrics, Mac-Graw Hills.
4. Johnston J.(1982).: Econometrics method, Mac-Graw hills and McGraw-Hill Education.