VEER NARMAD SOUTH GUJARAT UNIVERSITY

University Campus, Udhana-Magdalla Road,
Surat - 395 007.

M.Sc.: APPLIED STATISTICS

Effective From: 2007 – 2008

SEMESTER – II

Paper No.	Title of the Paper	Marks		
		Int.	Ext.	Total
MAS-201	Statistical Inference - I	30	70	100
MAS-202	Statistical Inference -II	30	70	100
MAS-203	Multivariate Analysis	30	70	100
MAS-204	Population Studies	30	70	100
MAS-205	Computer Programming Language - "C"	30	70	100
MAS-206	Practical paper-III based on Paper - MAS-201, MAS-202, MAS-203	30	70	100
MAS-207	Practical paper-IV based on Paper - MAS-204, MAS-205	50	100	150
Viva-Voce		30	70	100
Total		**260**	**590**	**850**

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SEMESTER : II

PAPER : MAS-201

STATISTICAL INFERENCE - I

1. Estimation.
2. Methods of obtaining estimators.
3. Properties of Point estimator:
   (i) Closed (ii) Unbiased (iii) Mean square consistency and simple consistency, Best Asymptotic normal (BAN or CANE). (iv) Sufficiency.
4. Minimum variance unbiased estimation.
5. Invariance.
6. Interval Estimation.
7. Elementary Decision Theory.

REFERENCES

1. Mood A.M., Graybill F.A. and Boes D.C. ; "An Introduction to Theory of Statistics"; McGraw Hill and Tata McGraw Hill.
2. Goon A.M., Gupta M.K. and Dasgupta B. : "An Outline of Statistical Theory", Vol.-1, 2 ; World press.
3. Rohatgi V. K. : "Introduction to Probability Theory and Mathematical Statistics"; Wiley Eastern.
4. Mukhopadhyay P. : "Mathematical Statistics", 2nd Ed. ; Books and Allied Publications.
5. Rao C. R. : "Linear Statistical Inference"; John Wiley.
6. Casella G. and Berger R. L. : "Statistical Inference"; Duxbury.

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SEMESTER : II

PAPER : MAS-202

STATISTICAL INFERENCE - II

Testing of Hypothesis :
Concepts of hypothesis, statistical hypothesis, simple and composite hypothesis, Null and Alternative hypothesis. One sided and two sided hypothesis. Test of hypothesis, Critical region or region of rejection, acceptance region. Types of errors. Sizes of the errors. Level of significance. Size of the test, power function of the test. Two-tail and one tail tests. Most powerful test. Likelihood Ratio Test & Test of significance as its particular case.

(i) Testing of means and proportion in one sample problem, both when sample is large and small.
(ii) Testing of the difference between means and proportion when samples are large.
(iii) Testing of the difference between means when samples are small.
(iv) Testing the equality of variance of two normal populations.
(v) Hypothesis testing of correlation coefficient.
(vi) Chi-square test of goodness of fit.

Order Statistics.

Nonparametric tests.

REFERENCES

1. Mood A.M., Graybill F.A. and Boes D.C : “An Introduction to Theory of Statistics”; McGraw Hill and Tata McGraw Hill.
2. Goon A.M., Gupta M.K. and Dasgupta B. : “An Outline of Statistical Theory” Vol.1, 2; World press.
3. Lehman E.L.: “Testing Statistical Hypothesis”; John Wiley and Wiley Eastern.
4. Gibbons J.D. : “Nonparametric Inference”; McGraw Hill.
5. Gibbons J.D. and Pratt J.W. : “Concepts of Nonparametric Theory”; Springer-Verlag.
6. Rohatgi V.K. : “Introduction to Probability Theory and Mathematical Statistics”; Wiley Eastern.
7. Mukhopadhyay P. : “Mathematical Statistics”, 2nd Ed.; Books and Allied Publications.
8. Rao C. R. : “Linear Statistical Inference”; John Wiley.
9. Daniel W.W. : “Applied Nonparametric Statistics”; PWS-KENT publishing Co., Boston.
10. Conover W.J. : “Practical Nonparametrics”; John Wiley.
11. Wald A. : “Sequential Analysis”; Wiley.

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SEMESTER : II

PAPER : MAS-203

MULTIVARIATE ANALYSIS

1. Concept and need of multivariate analysis, Normal distribution – Some important properties, Concept of Hoteling T^2 distribution (without derivation) and its applications.
2. Comparisons of several multivariate means, multivariable analysis of variances.
3. Classical linear regression model, least square estimation, inference from estimated linear regression model. Multivariate multiple regression. Comparison of two formulations of the regression models. Multiple Regression model with time dependent errors.
4. Concept and application of (i) Factor analysis (ii) Principal Component analysis and (iii) Canonical Correlation analysis.
5. Discrimination and classification : Separation and classification of populations, classification of multivariate populations. Fisher's discriminant function, Classification of several populations. Fisher's method of discriminating among several populations.
6. Concept of correspondence analysis and its application.

REFERENCES

1. Anderson T. W. : “An Introduction to Multivariate Statistical Analysis”; John Wiley.
2. Johnson R.A. and Wichern D.W. : “Applied Multivariate Statistical Analysis”.
3. Kshirsagar A. M. : “Multivariate Analysis”; Marcel Dekker.
4. Morrison D.F.: “Multivariate Statistical Methods”; McGraw Hill.
5. Muirhead R.J. : “Abstracts of Multivariate Statistical Theory”; John Wiley.
6. Seber G.A.F. : “Multivariate Observations”; John Wiley.
7. Srivastava and Khatri : “An Introduction to Multivariate Statistics”; North Holland.
8. Srivastava M.S. : "Methods of Multivariate Statistics"; John Wiley.
9. Dillon W.R. and Goldstein M. : "Multivariate Analysis : Methods and Applications"; John Wiley.

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SEMESTER : II

PAPER : MAS-204

POPULATION STUDIES

1. Introduction.
2. Life Tables.
3. Mortality.
4. Fertility and Reproduction.
5. Growth of Population and Models of Population.
6. Population Estimates and Projections.
7. Census and Sample Surveys.

REFERENCES

1. Barkley G.W. : "Techniques of Population Analysis"; John Wiley & Sons.
2. Pathak K. B. and F. Ram : "Techniques of Demographic Analysis"; Himalaya Publishing House.
3. R. Ramakumar : "Technical Demography"; Wiley Eastern Ltd.
4. H. Raj : "Fundamentals of Demography"; Surjeet Publication.
5. Cox P.R. : "Demography"; Vikas Publishing House.
6. Keyfitz N. and Caswell H. : "Applied Mathematical Demography"; Springer.
7. Keyfitz N. and Beekman J. A. : "Demography through Problems"; Springer-Verlag, New York.

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SEMESTER : II

PAPER : MAS-205

COMPUTER PROGRAMMING LANGUAGE – 'C'

1. Introduction.
2. C Fundamentals.
3. Operators and Expressions.
4. Data Input and Output.
5. Control Statements.
6. Functions.
7. Arrays.
8. Structures and Unions.

REFERENCES

1. Karnighan and Ritchie : " C programming Language " ; TMH.
2. Vijay Mukhi : " 'C' Odyssy " 6th Volume ; PHI.
3. Stephan Kochan : " Programming in 'C' " ; CBS.
4. Kelly and Bootle : " Mastering turbo C "; UPB.
5. Kanetkar Yashwant : " Let us C " ; BPB.
6. E Balaguruswamy : "Programming in C"
7. Robert Lafor : "Object - Oriented Programming in C" ; Galgotia Pub. Pvt. Ltd., New Delhi.