

**VEER NARMAD SOUTH GUJARAT UNIVERSITY**  
University Campus, Udhana-Magdalla Road,  
Surat - 395 007.

**M.Sc.: APPLIED STATISTICS**

**Effective From: 2007 – 2008**

**SEMESTER – I**

| Paper No.    | Title of the Paper   | Marks      |            |            |
|--------------|--|------------|------------|------------|
|              |  | Int.       | Ext.       | Total      |
| MAS-101      | Basic Mathematics and Elements of Probability Theory         | 30         | 70         | 100        |
| MAS-102      | Probability Distributions                                    | 30         | 70         | 100        |
| MAS-103      | Sampling Techniques  | 30         | 70         | 100        |
| MAS-104      | Statistical Quality Control and Reliability                  | 30         | 70         | 100        |
| MAS-105      | Introduction to Ms-Office and Internet                       | 30         | 70         | 100        |
| MAS-106      | Practical paper-I based on Paper - MAS-101, MAS-102, MAS-103 | 30         | 70         | 100        |
| MAS-107      | Practical paper-II based on Paper - MAS-104, MAS-105         | 50         | 100        | 150        |
| Viva-Voce    |  | 30         | 70         | 100        |
| <b>Total</b> |  | <b>260</b> | <b>590</b> | <b>850</b> |

**VEER NARMAD SOUTH GUJARAT UNIVERSITY**  
University Campus, Udhana-Magdalla Road,  
Surat - 395 007.

**M.Sc.: APPLIED STATISTICS**

**Effective From: 2007 – 2008**  
**SEMESTER : I**

**PAPER : MAS -101**

**BASIC MATHEMATICS AND ELEMENTS OF PROBABILITY THEORY**

1. Concepts of Sets and Function, Algebra of Sets and functions.
2. Permutations and Combinations.
3. Algebra of matrices.
4. Summation operation: Sums of some standard series of positive terms.
5. Concept of Derivative of a function.
6. Integration. .
7. Numerical Methods.
8. Probability.

**REFERENCES**

1. Scheick J. T.: "Linear Algebra with Application"; Tata McGraw Hill.
2. Dutta K. B.: "Matrix and Linear Algebra"; Prentice Hall India.
3. Friedberg S.H., Insel A. J. and Spence L. E.: "Linear Algebra", 4<sup>th</sup> Ed.; Prentice Hall India.
4. Sastry S. S.: "Introductory Methods of Numerical Analysis"; Prentice Hall India.
5. Jain M. K., Iyenger S.R.K. and Jain R. K. : "Numerical Methods for Scientific and Engineering Computation"; Wiley Eastern.
6. E Balaguruswamy: "Numerical Methods"; Tata McGraw Hill.
7. Mood A. M., Graybill F. A. and Boes D. C.: "An Introduction to Theory of Statistics"; McGraw Hill and Tata McGraw Hill.
8. Rohatgi V. K.: "Introduction to Probability Theory and Mathematical Statistics"; Wiley Eastern.

**VEER NARMAD SOUTH GUJARAT UNIVERSITY**

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

**M.Sc.: APPLIED STATISTICS**

**Effective From: 2007 – 2008**

**SEMESTER : I**

**PAPER : MAS -102**

**PROBABILITY DISTRIBUTIONS**

1. Random Variables & their Distributions.
2. Expectations & Moments of a Distribution.
3. Frequency Distributions.
4. Some Common Discrete Distributions :  
Bernoulli trial.  
Bernoulli distribution.  
Binomial distribution.  
Poisson distribution.  
Hyper-geometric distribution.  
Negative Binomial distribution.  
Geometric distribution.
5. Some Common Continuous Distributions:  
Uniform distribution  
Normal distribution  
Exponential distribution  
Beta and Gamma distributions
6. Sampling Distributions:  
 $\chi^2$  - distribution,  
t – distribution,  
F – distribution,  
Distribution of  $\bar{x}$  and  $S^2$  for Normal distribution.

**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. Jaiswal M. C. : “Statistical Distributions”; Guj. Book Pub. Board.
4. Rohatgi V. K. : “Introduction to Probability Theory and Mathematical Statistics”; Wiley Eastern.
5. Johnson R.V. and Kotz S. M. : “Discrete Distributions”; Wiley Eastern.
6. Johnson R.V. and Kotz S. M. : “Continuous Distributions” 1,2;Wiley Eastern.

**VEER NARMAD SOUTH GUJARAT UNIVERSITY**  
University Campus, Udhana-Magdalla Road,  
Surat - 395 007.

**M.Sc.: APPLIED STATISTICS**

**Effective From: 2007 – 2008**

**SEMESTER : I**

**PAPER : MAS - 103**

**SAMPLING TECHNIQUES**

1. Planning and Execution of Surveys.
2. Simple random sampling.
3. Stratified random sampling.
4. Systematic Sampling
5. Two stage sampling.
6. Cluster sampling.
7. Ratio, Product and Regression methods of Estimation.
8. Data Collection in Selected Fields.

**REFERENCES**

1. Cochran W. G.: "Sampling Techniques"; John Wiley & Sons, Inc., New York.
2. Hansen M. H., et al.: "Sample Survey Methods and Theory"; John Wiley & sons, Inc., New York.
3. Kish L. : "Survey Sampling"; John Wiley & Sons, Inc., New York.
4. Murthy M. N.: "Sampling Theory and Methods"; Statistical Publishing Society, Calcutta.
5. Raj D. : "Sampling Theory"; McGraw-Hill Book co., New York.
6. Raj D.: "The Design of Sample Surveys"; McGraw-Hill Book Co., New York.
7. Skate P.V., et al.: "Sampling Theory of Surveys with Applications"; the Iowa State Univ. Press, Ames, Iowa, USA and Indian Society of Agricultural Statistics, New Delhi.
8. Yates F.: "Sampling Methods in Censuses and Surveys"; Charles Griffin & Co. Ltd., London.
9. Goulden C. H.: "Methods of Statistical Analysis"; Asia Publishing House, Bombay.
10. Snedecor G.W. and Cochran W.G.: "Statistical Methods"; the Iowa State Univ. Press, Ames, Iowa, USA.

**VEER NARMAD SOUTH GUJARAT UNIVERSITY**  
University Campus, Udhana-Magdalla Road,  
Surat - 395 007.

**M.Sc.: APPLIED STATISTICS**

**Effective From: 2007 – 2008**

**SEMESTER : I**

**PAPER : MAS – 104**

**STATISTICAL QUALITY CONTROL AND RELIABILITY**

**Quality Control :**

Review of :

Quality and Statistical Quality control concept.  
Control Charts for Measurements.  
Control Charts for Attributes.  
Acceptance sampling Plans for Attributes.  
Cusum Charts.  
Standard Plans for Attributes.  
Plan for Acceptance Sampling by Measurement.  
Concept of Total Quality Management (TQM).  
Strategic Quality Planning.  
Organizing for TQM  
Productivity and Quality  
The Cost of Quality.  
Criteria for Quality Programs.  
ISO 9000 and onwards.

**Reliability :**

Basic concepts and distributions for product life, failure rate. Hazard function, Reliability function for Exponential, Normal, Log-normal, Weibull and Gamma Distributions. Analysis of Complete Data. Linear analysis and maximum likelihood analysis of censored data for exponential distribution only. Introduction of Bayes Methods in Reliability. Accelerated life testing. System reliability.

**REFERENCES**

1. Hopper A.G.: "Basic Statistical Quality Control"; McGraw Hill, London.
2. Gupta R.C.: "Statistical Quality Control"; Khanna Publishers, New Delhi.
3. Ryan T.P.: "Statistical Methods for Quality Improvement"; John Wiley & Sons.
4. Omachonu V.K. and Ross J.E.: "Principles of Total Quality"; S.Chand & Co., New Delhi.
5. Sinha S.K.: "Reliability and Life Testing"; Wiley Eastern Ltd., New Delhi.
6. I.Bazovksy: "Reliability Theory and Practice"; Prentice Hall International Series in Engineering.
7. Grant E. L.and Leavenworth R.: "Statistical Quality Control"; Tata Mc Graw Hill Publishing Co. Ltd., New Delhi.
8. Irving W.B.: "Elementary Statistical Quality Control"; Marcel Dekker, Inc., New York.
9. Gupta S.C. and Kapoor V.K.: "Fundamentals of Applied Statistics"; Sultan Chand & Sons.

**VEER NARMAD SOUTH GUJARAT UNIVERSITY**  
University Campus, Udhana-Magdalla Road,  
Surat - 395 007.

**M.Sc.: APPLIED STATISTICS**

**Effective From: 2007 – 2008**

**SEMESTER : I**

**PAPER : MAS - 105**

**INTRODUCTION TO MS-OFFICE AND INTERNET**

1. WINWORD.
2. EXCEL.
3. POWER POINT PRESENTATION.
4. Introduction to Graphical Package.
5. Introduction to Internet.
6. Web Browsers.
7. Web Server.
8. HTML.
9. Front Page (For static site only).

**REFERENCES**

- |    |   |             |        |
|----|---|-------------|--------|
| 1. | Work 6 for windows quick & easy reference | - Mansfield | - BPB  |
| 2. | Mastering Word 6 for windows              | - Mansfield | - BPB  |
| 3. | Mastering Excel 4 for windows             | - Townsend  | - BPB  |
| 4. | Mastering Excel 4 for windows             | - Chester   | - BPB  |
| 5. | Excel 5 for Windows Quick & Easy          | - Jones     | - Tech |