

GUJARAT UNIVERSITY

SYLLABUS OF

**MASTER OF PHILOSOPHY
EXAMINATION**

**M.PHIL.
COMMERCIAL
(STATISTICS)**

**M.PHIL.(COMMERCE)
SATATISTICS SYLLABUS**

**PAPER-I
RESEARCH METHODOLOGY**

1. Typology of Research – Basic Research, Applied Research, Action Research, Survey Research, Library Research, Laboratory Research. [10%]
2. Research Design – Meaning and importance; Casualty: The Basis of classification of various types of Research designs, Exploratory and Descriptive Research Designs, Factors influencing Experimental Validity, Quasi – Experimental and Experimental Designs. [10%]
3. Data collection strategies – Primary and Secondary data collection methods, Questionnaire, Types of Questionnaires, Projective Techniques, Non-probability Sampling methods. [10%]
4. Attitude Measurement and Scaling: Rule of measurement. Types of scales: Nominal, Ordinal, interval and Ratio scales, Mathematical and Statistical Analysis of scales, Scaling Techniques: Thurston's Scale, Likert's scale & semantic Differential scale. [10%]
5. Decision Theory: Basic elements of decision theory, decision function, risk function, various problems of inference viewed as decision problem, non-randomized and randomized decision rules, Admissibility, completeness and essential completeness of classes of decision rules. Role of sufficient statistics and convex loss function. [15%]
6. Multivariate Analysis & Econometric Methods: Multivariate Normal distribution, Hotelling's T^2 for one and two sample cases, D^2 – Statistic, Fisher-Behren's problem, Ridge regression, Stochastic regressors – Lagged and Dummy Variables, Regression on Dummy Dependent Variable: Linear Probability Model, Logit, Probit and Tobit Models, Autoregressive and distributed – lag models, Koyak approach and Almon approach, Durbin h-test, Simultaneous Equation Models, Identification problem. Recursive Models, Indirect least squares, Generalized least squares, weighted least squares, Two – stage least squares – some practical applications. [30%]
7. Stochastic Processes: Introduction to Stochastic processes, definition, classification according to state space and time domain, Introduction to continuous time Markov Process – Poisson, pure birth, pure death and pure birth and death processes and their applications, stationary processes, Applications of stochastic processes in Social and behavioural sciences – stochastic model for fertility, social mobility, educational advancement, traffic flow models, models for consumer behaviour and human resource management. [15%]

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M.PHIL (COMMERCE)
SUBJECT: STATISTICS

PAPER-II - OPERATION RESEARCH

SUGGESTED TOPICS

- Classical Optimisation Theory
- Parametric Linear Programming and Sensitivity Analysis
- Selective Approaches to Multi-item Inventory Control
- Goal Programming
- Deterministic Dynamic Programming
- Simulation Modeling
- Applications of these techniques in the field of Commerce.

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PAPER-III
APPLIED STATISTICS

1. Time Series Models and economic forecasting: Exploring data patterns and Choosing a forecasting Technique, Moving Average and Smoothing Methods, Auto regressive Models, Moving Average models, ARIMA Models, Box-Jenkins (ARIMA) Methodology, Exponential Smoothing, Judgemental elements in forecasting some case studies from the fields of marketing and Management, Introduction to ARCH and GARCH Models and their applications. 30%

2. Total Quality Management & Quality Control: Quality improvement through statistical Methods – Statistical Quality Control; Process Capability Analysis, Experimental Design and Taguchi's Method; Quality Management – Quality Function Deployment, Innovative Adoption and Performance Evaluation, Tools for Continuous Quality Improvement, Some well-known Quality Awards, Quality Control In Service Sector – Some Case studies and applications. 20%

3. Reliability and Life – Testing: Statistical failure models; Inference procedures for failure models, Testing of reliability hypothesis, Goodness of fit tests, Distribution – free and Monte-Carlo methods, Bayes methods in reliability – Introduction, Comparison of Bayes and Classical methods, Introduction to Accelerated life testing. 20%

4. Bayesian Inference: Basic concepts Axiomatic formulation of subjective probabilities and utility, prior distributions, existence and construction of Non-informative priors, concept of robustness of priors, Bayesian point estimation, Hypothesis testing (both simple and composite). 20%

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M.PHIL (COMMERCE)

SUBJECT: STATISTICS

PAPER-IV - DISSERTATION

For Dissertation purpose the student can choose any specialization area of Commerce such as Finance, Marketing, Management and Accountancy and apply any of the Statistical tools to the research problems in these areas. The topic must be chosen with the consent of Guide and an approval of the University must be obtained and it must illustrate a considerable quality of the dissertation by vast application of statistical techniques in various specialized areas of commerce. The suggested areas for dissertation:

1. Application of operation research techniques in the field of commerce.
2. Case study in Bayesian statistics.
3. Utility and probability assessment in settling an insurance claim.
4. Trend analysis in technological forecasting.
5. Sample information in marketing a new product.
6. A decision tree for selection of tenderers.
7. Company sales forecasting using exponential smoothing.
8. Applying multivariate analysis techniques to the various problems in marketing & management.

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M.PHIL(COMMERCE)
SUBJECT: STATISTICS

PAPER-II - OPERATION RESEARCH

SUGGESTED TOPICS

- Classical Optimisation Theory
- Parametric Linear Programming and Sensitivity Analysis
- Selective Approaches to Multi-Item Inventory Control
- Goal Programming
- Deterministic Dynamic Programming
- Simulation Modeling
- Applications of these techniques in the field of Commerce.

M.PHIL(COMMERCE)
SUBJECT: STATISTICS

PAPER-III - APPLIED STATISTICS

SUGGESTED TOPICS

- Time Series Models and economic Forecasting.
- TQM & JIT Techniques
- Reliability and Life Testing
- Bayesian Inference
- Applications of these topics in the field of commerce.

For Dissertation purpose the student can choose any specialization area of Commerce such as Finance, Marketing, Management and Accountancy and apply any of the Statistical tools to the research problems in these areas. The topic must be chosen with the consent of Guide and an approval of the University must be obtained and it must illustrate a considerable quality of the dissertation by vast application of statistical techniques in various specialized areas of commerce. The suggested titles are:

1. Study of cost-pricing inter-relationship in any one unit of manufacturing or service nature.
2. A comparative study of return on investment of atleast 3 units having a paid-up capital of Rs.50 lacs each & for a period of 5 years or more.
3. Study of budgetary control system of an enterprise.
4. Study of dividend policy as viewed by shareholders.
5. Study of inflation accounting practices.
6. Study of Human Resource accounting practices.
7. Accounting for leases.
8. Performance evaluation of Banking Services with special reference to customer awareness and preferences.
9. Examining trends in international accounting research.
10. Environmental accounting and costing.
11. Productivity and Capacity utilization in an industry.
12. Value Creation and Cost Control in any corporate entity

GUJARAT UNIVERSITY
M.PHIL. (COMMERCE)
(SYLLABUS EFFECTIVE FROM ACADEMIC YEAR 2001-2002)
ACCOUNTANCY PAPER-I
RESEARCH METHODOLOGY

1. Typology of Research – Basic Research, Applied Research, Action Research, Survey Research, Library Research, Laboratory Research.
2. Data Collection Strategies – Primary data through communication, Observation and experiments, Methods of Collecting primary data, Different forms of questionnaire, Sources of Secondary Data, Projective techniques.
3. Variable, Constant, Attribute, Rule of Measurement, Types of Scales: Nominal, Ordinal, Interval and Ratio Scales, Mathematical and Statistical analysis of scales, Scaling Techniques: Thurston's scale, Likert's scale & Semantic differentials.
4. Sampling Techniques - Random, Stratified, Systematic, Convenience, Quota, Cluster and multistage sampling method, Determination of Sample size for both continuous data and attributes data.
5. Time Series and Index Numbers: Components of time series, Smoothing the Annual Time Series – Method of Moving Averages & Exponential Smoothing, Least square trend fitting & Forecasting, Estimation of Seasonal variations. Index numbers: Types of Index numbers, Price & Quantity Indices, Laspayre, Paasche & Fisher's Index numbers.
6. Univariate analysis – Summary measures.
7. Bivariate analysis – Correctional measures.
8. Multivariate Analysis – Multiple Regression Analysis, Preliminary idea of Factor analysis, Discriminant analysis, Principal Component analysis: Use of eigen values & eigen vector, Introduction to factor analysis.
9. Hypothesis Testing: Null & Alternative hypothesis, type-I, & type-II errors, Power of the test, level of significance, Small & Large sample tests of significance: Z-test of hypothesis of Mean, P-value approach to hypothesis testing one tailed & two-tailed tests, t-test for single mean and for differences in two means, F-test, X-test, ANOVA (One-way & two way classification) only introduction as an application in Regression Analysis.
10. Non-Parametric Tests: Run Test.
11. The application of above tools & techniques in the area of Accounting Management.

References:

1. Research methods in Social Relations by Jahoda & Cook.
2. Business Research Methods by William G. Zikmund (3rd & 4th edition).
3. Basic Business Statistics – Concepts & Applications by Mark L. Berenson & David M. Levine (6th edition)
4. Basic Econometrics – Damodar Gujarati
5. Marketing Research – Churchill.
6. Statistics for Management – Levin & Rubin (7th edition).
7. Research Methodology – C.R. Kothari
8. Quantitative Techniques – C.R. Kothari
9. Statistics for Business & Economics – R.P. Hooda