

ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ



UNIVERSITY OF MYSORE
(Estd.1916)

DIPLOMA
in
RESEARCH METHODOLOGY AND
STATISTICAL SOFTWARE FOR
DATA ANALYSIS



UNIVERSITY OF MYSORE

DEPARTMENT OF STUDIES IN ECONOMICS AND COOPERATION
MANASAGANGOTRI, MYSURU - 570 006

DIPLOMA IN RESEARCH METHODOLOGY AND STATISTICAL SOFTWARE FOR DATA ANALYSIS

SYLLABUS: 2017-2018


CHAIRMAN
Department of Studies
in Economics and Co-operation
University of Mysore
Manasagangotri
MYSORE- 570 006

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**DEPARTMENT OF STUDIES IN ECONOMICS AND CO-OPERATION
MANASAGANGOTRI, MYSURU-570 006**

DIPLOMA IN RESEARCH METHODOLOGY AND STATISTICAL SOFTWARE FOR DATA ANALYSIS
[For Research in Social Science, Commerce & Management]

[Syllabus: 2017-2018]

INSTRUCTIONS:

1. **Duration:** Diploma Course is for a duration of TWO Semesters [i.e., ONE YEAR]
2. **Number of Credits:** Number of Credits for each Course shall be 20.
3. **Teaching Hours:** 5 Hours per week for each course. [About 60 hours for each course]
[This shall be inclusive of theory, application, practical work, tutorials, and seminars as required/applicable to each course depending on the content and approach by the faculty]
4. **Allocation of Marks: Number of Marks for Each Course: 100**
Out of 100 Marks: 70 Marks is for Theory Examination [Comprehensive end Semester Exam]
 30 Marks is for Internal Assessment [for all the Courses in 2 Semesters]
30 Marks for Internal Assessment shall have the break-up as follows:
 10 Marks for One Test
 05 Marks for One Assignment
 05 Marks for Seminar Presentation
5. **Fees Structure:**
 - This is a fully Self-Finance Course and the Fee shall be as prescribed by the University of Mysore in its Prospectus copy every year.

DIPLOMA IN RESEARCH METHODOLOGY AND STATISTICAL SOFTWARE FOR DATA ANALYSIS

Course No.	Title of the Certificate Course	Number of Credits	Marks for Theory	Internal Assessment	Total Marks
Diploma: 2.1	Research Methodology & Data Analysis	10	100	50	150
Diploma: 2.2	Statistical Software for Data Analysis	10	100	50	150
TOTAL		20	200	100	300

6. Eligibility Criteria:

- Students who have completed their Bachelor's Degree with Economics as one of the Cognate Subjects, B.Sc., with Mathematics or Statistics as one of the Cognate Subjects in Bachelor's Programme, B.Com, BBM and Students with Masters' Degree in Social Science, Commerce & Management are eligible to pursue this Course.



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[For Research in Social Science, Commerce & Management]

I-Semester

Course Code: Diploma: 2-1

RESEARCH METHODOLOGY

Preamble: Research as defined in Webster's 'new international dictionary' consists of "careful or critical inquiry or examination in seeking facts or principles; diligent investigation in order to ascertain something". This emphasis of the fact that - research in its broader sense is a purposive investigation or inquiry. The main purpose of research is to describe, interpret and explain phenomena by relating it to other phenomena, thereby setting it within its proper context and by making its meaning or sense explicit through its chain of interconnections. This Course will give a thorough insight to acquire research skills and capabilities.

Module - 1: Introduction to Research Process

What is Research? - Meaning and Characteristics - Types of Research - Methods - Planning a Research - Identification of Research Problem - Defining the Research Problem - Theoretical Foundation - Review of Literature - Objectives - Hypotheses - Difference between a Proposition, a Hypothesis and a Theory - Data Source - Sampling - Scope - Methodology - Logic of Inquiry - Research Design - Reference and Documentation in the Library - Need and Importance of Research in Economics - Applicability - Plagiarism - Limitations and Ethical Issues in Research.

Module - 2: Types and Methods of Research

Classification of Research: Pure and Applied Research - Qualitative, Quantitative and Mixed - Exploratory, Descriptive, Diagnostic, Evaluation, Action and Experimental Research - Historical Research - Surveys - Case Study - Field Study - Steps in Research.

Module - 3: Data Sources and Methods of Data Collection

Sources of Data: Primary and Secondary Sources of Data - Quantitative Data: Availability of Sources - Time Series Data - Cross Section Data and Pooled Data - Census, Reports and Documents, other Published and Unpublished Sources.

Qualitative Methods of Data Collection: Direct Observation - Indirect Observation: Interview Method, Schedules and Questionnaires - Questionnaire Designing Procedure - Case Study, Projective Methods - Simulation - Merits & Demerits.

Module - 4: Sampling Considerations and Data Processing

Sampling Considerations: Concepts - Sample v/s Census - Principles of Sampling Design & Process - Types of Sample Design: Probability Sampling Techniques: Simple Random, Stratified Random, Cluster and Multi-Stage and other Methods of Sampling. Non-Probability Sampling Techniques: Quota Sampling, Convenient Sampling, Purposive Sampling, Judgment Sampling and other Methods - Determination of Sample Size - Advantages and Disadvantages - Errors in Sampling.

Data Processing: Processing and Distribution - Field Work Validation - Tabulation - Editing - Coding - Classification and Tabulation of Data - Presentation - Graphical Representation.

Module - 5: Data Analysis and Interpretation (Theoretical Exposure)

Univariate and Multivariate Data Analysis - Descriptive vs Inferential Analysis - Descriptive Analysis of Univariate Data and Bivariate Data - Testing of Hypotheses: Concepts, Steps in Testing of Hypothesis.

Estimation of Mean: Test of Single Sample Mean - Two Independent Means Tests - Testing for Means of Paired Data - Testing for the Equality of K Population Means - Assumptions for Analysis of Variance - Between Treatments Estimate of Population Variance - Within Treatments Estimate of Population Variance - Comparing the Variance of Estimates - The F Test - Multiple Comparison Procedures.

Estimation of Variance: Test of Single Sample Variance - Two Sample Variance Test.

Non-Parametric Tests: Advantages & Disadvantages - Chi-square tests - Tests for Randomness.

Introduction to Advanced Data Analysis Techniques: Correlation and Regression Analysis - Factor Analysis - Discriminant Analysis - Cluster Analysis - Multidimensional Scaling.

Module - 6: Report Writing and Presentation of Results

Importance of Report Writing - Types of Reports: Brief Reports, Detailed Reports, Technical Reports and Business Reports - Report Preparation - Report Structure: Preliminary Section, Main Report - Interpretations of Results - Research Findings and Suggested Recommendations - Limitations of the Study, and End Notes - Report Writing: Report Formulation - Effective Documentation: Need and Guidelines: Presenting Tabular Data, Visual Representations: Tables, Graphs, Charts - Presenting Footnotes and Bibliography - Oral Presentation of Research.

References: [Please refer to the Latest Editions]

1. Bryman Alan, *Social Research Methods*, Oxford University Press, Oxford.
2. Kothari C.R., *Research Methodology*, New Age International Publication, New Delhi.
3. Krishnawamy O.R. and Ranghanathan, M., *Methodology of Research in Social Sciences*, Himalaya Publishing House, Bangalore.
4. Kurian C.T. *Research Methodology in Economics*, Institute of Development Studies, Madras.
5. Majumdar P.K., *Research Methods in Social Science*, Viva Books Private Limited, New Delhi.
6. Robert, A. Day, *How to Write and Publish a Scientific Paper*, Cambridge University Press, Great Britain.

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DIPLOMA IN RESEARCH METHODOLOGY AND STATISTICAL SOFTWARE FOR DATA ANALYSIS

I-Semester

Course Code: Diploma: 2-2

STATISTICAL SOFTWARE FOR DATA ANALYSIS

[For Research in Social Science, Commerce & Management]

Preamble: In the era of information technology proper use of information technology in most of the disciplines has become a necessity. Economics being an empirical science, computer has emerged as the pivotal instrument for economic analysis, research and forecasting. Given the highly quantitative aspect of research in economics, it becomes imperative for students to equip themselves with a basic knowledge of statistical software if they are to keep abreast of the explosive growth of knowledge in the rapidly growing area. This is essential for anyone intending to specialize in applied economics, as statistical software are the only interface between data and their meaningful analysis (especially if the data collection is done at a substantially sophisticated level). Therefore the students of economics need to be equipped with skills and tools based on statistical software. This will not only enhance their employability but also prepare them for future challenges. This course is basically tailored to meet this current lacuna in the research in applied economics.

Module - 1: Introduction - Getting Started - Entering Data in the Data Viewer - Defining Variables - Recoding Variables - Computing new Variables - Data Analysis with Statistical Software - Generating Frequency Table, Bar Chart, Pie Chart, Histogram, Arithmetic Mean, Median, Standard Deviation and Range, Contingency Table, Chi-square, and Cramer's V, Pearson's r , and Spearman's rho, Scatter Diagrams - Saving, Retrieving Data - Printing Output.

Module - 2: Matrix and Determinants Operations - Computing Inverse Matrix, Input-Output Analysis - Construction of Different Tables - Transaction Matrix, Technical Coefficient Matrix, Computation of Values on the Basis of Problems.

Module- 3: Computing, Discounting and Calculation of Present Value - Linear Programming - Procedure used in Formulating and Solving Linear Programming Problems- Graphical and Simplex Methods, Profit Maximization and Cost Minimization.

Module - 4: Construction of Frequency - Generating Graphs - Histogram, Pie Charts, Bar - Graphs, Calculation of Probability, Calculation of Central Tendencies and Measures of Dispersion.

Module - 5: Estimation Correlation Coefficient - Zero Correlation Matrix - Partial Correlation - Estimation of Simple Regression - Ordinary Least Squares - Estimation of Multiple Regression.

Module - 6: Test of Statistical Significance - 't' Test - F Test - ANOVA Test - Chi-Square Test Construction of Index Numbers - Deflating a Series by Price Indexes - Time Series Analysis and Forecasting.

References: [Please refer to the Latest Editions]

1. Bryman Alan, *Social Research Methods*, Oxford University Press, Oxford.
2. Edward Minieka, *Statistics for Business with Computer Application*, South-Western, USA
3. Sonia Taylor, *Business Statistics*, Palgrave.



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COMPUTER BASICS

[A SUPPORTIVE COURSE TO STATISTICAL SOFTWARE FOR DATA ANALYSIS]

Module - 1: Introduction to Digital Computers

Historical Perspective of Computer Development - Generation of Computers - System Logical Organization - Number Systems: Binary, Octal, Hexadecimal.

Module - 2: Computer Hardware

Fundamentals of Computers - Organization and Components of Computers - Computer Hardware - Input Devices: Keyboard, Mouse, and VDU - Output Devices: Printers (various types), Plotter and Monitor, Scanner, Digitizer etc., - Secondary Storage Devices: Floppy Disk, Hard Disk and CD ROM - Specification of peripherals and Computers.

Module - 3: Computer Software

Different Types of Software, Translator and Compilers - Application Software - Algorithms and Flow Chart - Programming Language - Errors - Types - Introduction Operating System and Utilities.

Module - 4: Computing Environment

Types of Computers: Micro Computers, Mini Computers, Main Frame Computers, Desk Top Computers, Note Book Computers and Work Stations - Computer Networks - Brief Introduction to LAN, WAN and Internet.

Module - 5: Office Automation

Various Types of Operating System - MS DOS, Basic Commands - Windows 1998 and 2000 - Introduction - Working with Windows - Copying, Creating, Deleting Files and Folders in Windows - Introduction to Window Application - Programme - MS Office - Word, Excel and Power Point - Information Integrity Ensuring Integrity - Computer Security - Preventive Measures and Treatment.

Module - 6: Data Processing and Data Management

Inputting Data from the Keyboard - Creating File in Microsoft Excel - Loading of existing Data Set - Inputting Data from Raw Data File - Copying Data from Microsoft Excel to Clipboard - Adding Two Sheets/Files, Editing Files - Printing, Saving and Copying Edited Files.

Module - 7: File Processing

File Processing - Sorting - Searching - Merging - Summarizing - Direct Access - Storage - Retrieval - File Organization Techniques - Documentation Debugging Storage and Time Execution Estimation - System Security.

Module - 8: Internet

Introduction to Internet - World Wide Web - Electronic Mail - Browsing the Web - Utilities - Tools and Techniques - Introduction to e-Commerce - e-Payment - e-Security- e-Governance - e-Economics.

References: [Please refer to the Latest Editions]

1. Reader's Digest, *How to Do Just Anything on a Computer*, London.
2. Saxena Sanjay, *A First Course in Computers*, Vikas Pub., House Private Ltd, New Delhi.