# UNIVERSITY        OF MYSORE

Estd. 1916

**Vishwavidyanilaya Karyasoudha
Crawford Hall, Mysuru- 570 005**

No.AC.6/450/2016-17                    Dated: 29.06. 2017

## NOTIFICATION

Sub:  Syllabus for P.G Diploma, Diploma Courses and Certificate Courses
         from the academic year 2017-18

Ref: 1. Decision of the Faculty of Arts Meeting held on  9th March 017.
       2. Decision of the Academic Council Meeting held on 30th March 2017.

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The Board of Studies in Economics and Co-Operation (PG) which met on 18th November 2016 has recommended to introduce the following PG Diploma and Certificate Courses from the academic year 2017-18.

1.  Restructuring and Revision of Syllabus for M.A.Co-operative Management.
2.  Syllabus for P.G.Diploma Courses for the following:

   ( i)  P.G.Diploma in Research Methodology and Quantitative Techniques for Data
         Analysis.

   (ii) Third Sector & Co-operative Management:- (Syllabus to be submitted to the
         University).

3.  Syllabus for Diploma Courses for the following (Research in Social Science), Commerce &
    Management:

   (i)     Diploma in Quantitative Techniques and Research Methodology.
   (ii)    Diploma in Research Methods, Economitrics and Statistical software for Data
           Analysis.

4.  Syllabus for Certificate   Courses in  the  following ( For  Research in Social Science,
    Commerce and Management:

 (i)   Certificate Course in Basic Mathematics for Research.
 (ii)  Certificate Course in Basic Statistics for Research.
 (iii) Certificate Course in Theory of Econometrics for Research.
 (iv)  Certificate Course in Applied Econometrics for Research.
 (v)   Certificate Course in Research Methodology .
 (vi)  Certificate Course in Statistical Software for Data Analysis.
 (vii) Certificate Course in Indian Economic Policy Analysis.

The meeting of faculty of Arts and Academic Council which were held on 9th March 2017 and 30th March 2017 respectively have also approved the above proposals and it is  notified and shall be effective from the academic year 2017-18.

# UNIVERSITY OF MYSORE

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

### CERTIFICATE COURSES

### [Syllabus: 2017-2018]

**INSTRUCTIONS:**

1. **Duration** : Certificate Course is for duration of 3 Months/1 Month/Two Weeks.

2. **Number of Credits** : Number of Credits for Each Certificate Course shall be FIVE.

3. **Teaching Hours** : 5 Hours per Week x 12 Weeks = about 60 Hours for Each Course.

          -OR- : Intensive Certificate Course for One Month.

           3 Hours per Day x 5 Days = 15 Hours per Week x 4 Weeks = 60 Hours.

          -OR- : Intensive Certificate Course for Two Weeks.

           5 Hours per Day x 6 Days = 30 Hours per Week x 2 Weeks = 60 Hours

           : [This shall be inclusive of Theory/Application/Practical-work and seminars as required/applicable to each course depending on the content/approach by faculty]

4. **Scheme:** : Fully Self Finance Programme [i.e.,Scheme-B]

5. **Fees Structure** : Rs. 4000/- [Per Certificate Course]

6. **Intake** : Minimum 30 & Maximum 60

7. **Allocation of Marks: Number of Marks for Each Course: 100**

    Out of 100 Marks: **C3** = 70 Marks is for Theory Examination [Comprehensive end Semester Exam]

          **C1+ C2** = 15 + 15 = 30 Marks is for Continuous Assessment [for each Cours]

    30 Marks for C1 & C2 shall have the break-up as follows:

        C1 : 10 Marks for the First Test + 5 Marks for Assignment [for each course]
        C2 : 10 Marks for the Second Test + 5 Marks for Seminar [for each course]

**Note:** Minimum of 30% in C1+C2 put together is required for a candidate to qualify for taking up C3 Examination.

8. **General 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 purse this Course.

## LIST OF CERTIFICATE COURSES

| Sl. No. | Certificate Course in | Course to be Offered During | Marks for Theory | Internal Assessment | Total Marks |
|---|---|---|---|---|---|
| 1 | Certificate Course in Basic Mathematics for Research | I-Semester | 70 | 30 | 100 |
| 2 | Certificate Course in Basic Statistics for Research | II-Semester | 70 | 30 | 100 |
| 3 | Certificate Course in Theory of Econometrics for Research* | III-Semester | 70 | 30 | 100 |
| 4 | Certificate Course in Applied Econometrics for Research** | IV-Semester | 70 | 30 | 100 |
| 5 | Certificate Course in Research Methodology | III-Semester | 70 | 30 | 100 |
| 6 | Certificate Course in Statistical Software for Data Analysis*** | IV-Semester | 70 | 30 | 100 |
| 7 | Certificate Course in Indian Economic Policy Analysis | Any Semester | 70 | 30 | 100 |

**Note: Any Certificate Course shall be offered only when the number of students seeking admission is Minimum 30.**

**Note:**

1. * Knowledge of Basic Mathematics and Statistics is essential to pursue the course on Theory of Econometrics
2. ** Knowledge of Basic Mathematics, Basic Statistics and Theory of Econometrics is essential to pursue a course on Applied Econometrics.
3. ***Knowledge of Basic Mathematics, Basic Statistics, Theory of Econometrics and Applied Econometrics is essential to pursue a course on Statistical Software for Data Analysis.

**UNIVERSITY OF MYSORE**

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

**CERTIFICATE COURSE IN BASIC MATHEMATICS FOR RESEARCH**

[For Research in Social Science, Commerce & Management]

**Preamble:**     Economics is incomplete without knowledge of mathematics, since mathematics gives flesh and blood to the subject of Economics.  Mathematics for Economics deals with various applications of mathematical tools and techniques in defining and developing economic relationships. So this course, accordingly, is designed to include various mathematical methods to analyze and understand economic theories.

**Module-1:     Basic Mathematics for Economic Analysis**

Relationship between Mathematics and Economics - Applications of Mathematics in Economic Analysis - Its Uses and Limitations - Logic, Sets and Relations **-** Functions -Meaning and Types: Linear and Non-Linear, Power, Exponential and Logarithm - Analytical Geometry - Simultaneous Equations - Solutions for Two Variables Application to Market Equilibrium: Derivation of Demand and Supply Functions - Marshal and Walras' Stability Conditions - Effect of Taxes and Subsidies, Indifference Curves, National Income, Interest: Compounding and Discounting, Changes in Aggregate Demand and Supply Functions, Consumption Function.

**Module-2:     Elementary Matrix Algebra**

Basic Concepts - Types of Matrix - Matrix Operations - Transpose - Inverse Matrix -Determinants: Meaning, Properties, Rank of Matrix, Minor, Co-factor.
Functions of Several Variables - Cramer's Rule and its Applications in Economics.

**Module-3:     Differential and Integral Calculus**

Differential Calculus**:** Limits - Derivations - Rules of Differentiation - Partial Derivatives, Total Derivatives, - Maxima and Minima for One and Two Variables.

**Applications to Economic Analysis**:
*Consumers Behavior*: Elasticity of Demand, Relationship between Price Elasticity and TR, AR and MR, Consumers' Equilibrium and Utility Maximization

*Firm's Behaviour*: Production Function - Cost Function - Revenue Function - Equilibrium of Firm and its Profit Maximization - Homogenous Function - Cobb-Douglas Production Function - CES Production Function - Euler's Theorem - Monopoly and Joint Production -Duopoly, Monopolistic Competition and Oligopoly.
Integral Calculus: Techniques of Integration - Definite and Indefinite Integration.

*Applications to Economic Analysis*:  Consumer's Surplus - Producer's Surplus.

Introduction to Frontier Analysis: Technical Efficiency - Technological Change and Total Productivity - Multi-Market Equilibrium.

**Module-4:    Difference and Differential Equations**

*Difference Equations*: Definitions and Concepts - Solutions to First Order and Second Order Difference Equations.
 Applications to Economics: Cob-web Model.

*Differential Equations*: Definitions and Concepts - Solutions to First Order and Second Order Differential Equations.
 Applications to Economics: Harrod-Domar Model, Multiplier and Accelerator.

**Module-5:    Linear Programming and Input-Output Analysis**

*Linear Programming*: Basic Concepts - Constrained Optimization - Formulation of Linear Programming Problem - Nature of Feasible and Optimal Solutions - Solution through Graphical Methods - Introduction to Simplex method - Duality Theorem.
*Input-Output Analysis*: Basic Concepts, Static, Open and Closed Input-Output Models

**References:** [Please refer to the Latest Editions]

1. Allen R.G.D., *Mathematical Analysis for Economists*, Macmillan.
2. Bose D., *An Introduction of Mathematical Economics*, Himalaya Publishing House, Mumbai.
3. Chiang A.C., *Fundamental Methods of Mathematical Economics,* McGraw-Hill Higher Education.
4. Veerachami R., *Quantitative Methods for Economists*, New Age International Pub., New Delhi
5. Yamane Taro, *Mathematics for Economists - An Implementer Analysis,* Phi Learning Publishers.

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**CERTIFICATE COURSE IN BASIC STATISTICS FOR RESEARCH**

[For Research in Social Science, Commerce & Management]

**Preamble:** Economics has become more and more analytic over the years, requiring sufficient knowledge of quantitative methods. To meet this requirement, a course in Statistics for Economics is absolutely essential. This course will help the student in data collection, presentation, analyses and drawing inferences about various statistical hypotheses. Further, it helps to develop the analytical skills in the student.

**Module-1:    Introduction to Statistics**

Types of Data - Nominal, Ordinal & Ratio-Scale Data, Qualitative and Quantitative Data, Individual, Discrete and Continuous Data - Cross Section, Time Series and Pooled Data - Sources of Data - Population and Samples - Descriptive Statistics and Inferential Statistics.

**Module-2:     Measures of Average and Dispersion**

Measurement of Average - Arithmetic Mean, Weighted Arithmetic Mean, Geometric Mean, Harmonic Mean, Median, Quartile, Percentiles, and Mode.
Measures of Variability - Range, Inter-quartile Range, Quartile Deviation, Percentiles Deviation - Mean Deviation, Standard Deviation, and Coefficient Variation.

**Module-3:    Probability and Distribution**

Probability Theory - Concepts and Approaches to Estimate Probability - Probability Distribution Functions - Theoretical Distribution: Normal, t, Chi-Square & F Distribution.

**Module-4:    Theory of Estimation and Hypothesis Testing**

Concept of Estimator - Sampling Distribution of Estimator - Point and Interval Estimation - Properties of Good Estimator for Small and Large Samples.
Hypothesis Testing: Approaches to Hypothesis Testing - Confidence Interval Approach -Test of Significance Approach and P-Value Approach- Formulation of Hypothesis - Null and Alternative - Level of Significance - One Sided and Two Sided Hypothesis - Type-I and Type-II Error - Test Statistic- Critical Value - Parametric and Non-Parametric Tests.

**Module-5:    Correlation and Regression**

*Correlation*: Meaning and Types of Correlation - Measurement of Correlation - Scatter Diagram - Karl Pearson's Coefficient of Correlation - Spearman's Rank Correlation - Testing of Correlation Coefficients.
*Regression*: Simple Regression Model - Estimation - Least Squares Method - Goodness of Fit - Introduction to Multiple Regression.

**Module-6:     Time Series Analysis**

Nature and Decomposition of Time Series  - Analysis of Trend - Polynomial Trend - Moving Average Method, Exponential Smoothening, Least-Square Method, Seasonal Component - Forecasts and their Accuracy - Root Mean Square Error.

**Module-7:     Index Numbers**

Nature and Purpose of Index Numbers - Types of Index Numbers: Price Index - Retail Price Index - Quantity Index, Link and Chain Index - Simple and Aggregate Index Numbers: Laspeyre's Index, Paasche's  Index, Marshall and Edgeworth's Index - Fisher's Index - Time Reversal and Factor Reversal Tests - Deflation and Splicing of Index Numbers - Problems of Construction of Index Numbers - Limitation of Index Numbers.

*Practical Component:*

***Graphical Presentation of Data:*** *Tabular and Graphical Methods - Relative Frequency and Percentage - Frequency Distribution - Bar Graphs, Line Graph, Pie Charts, Histogram, Cumulative Distribution and Ogives.*

**References: [Please refer to the Latest Editions]**

1.  Anderson, Sweeney & Williams, *Statistics for Business & Economics,* Thomson South-Western, Bangalore.
2.  Gupta S P. *Statistical Methods,* S. Chand and Company, New Delhi.
3.  Veerachami R. *Quantitative Methods for Economists,* New Age International Publication, New Delhi.
4.  Yamane Toro, *Statistics - An Introductory Analysis,* Harper and Row Publishers, New York.

# UNIVERSITY OF MYSORE

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

### CERTIFICATE COURSE IN THEORY OF ECONOMETRICS FOR RESEARCH

[For Research in Social Science, Commerce & Management]

**Preamble:** The explosive growth in econometric literature in the last few decades hardly needs any emphasis. Introduction of this Course can be viewed as an attempt to expose the students to the basic concepts of econometrics. Keeping this in mind, the focus of this Course will be on a meaningful interface between theory and application - the emphasis being more on empirical analysis rather than theoretical rigour.

**Module-1:     Introduction to Econometrics**

Meaning - Nature and Scope of Econometrics - Distinction between Economics and Econometrics, Mathematics and Econometrics, Statistics and Econometrics - Methodology of Econometrics - Types of Econometrics.

**Module-2:     Simple and Multiple Regression Model**

*Simple Regression*: Meaning - Basic Ideas - Significance of Disturbance Term. Method of Estimation: Ordinary Least Squares and Maximum Likelihood Estimation - BLUE Property - Coefficient of Determination - Assumptions - Hypothesis Testing - Confidence Interval and Test of Significance Approach - Testing Regression Coefficients - Interpretation of Results.

*Multiple Regression*: Meaning - Three Variable Regression Model - Partial Regression Coefficients - Method of Estimation - R-Square and Adjusted R-Square - Hypothesis Testing - Testing Individual Regression Coefficient - Overall Significance Test - ANOVA.
Introduction to Matrix Approach to Estimation of Parameters of more than Three Variables.

**Module-3:     Practical Problems of Regression**

Multicollinearity: Nature - Causes -Consequences - Detection - Remedial Measures.
Heteroscedasticity: Nature - Causes -Consequences - Detection - Remedial Measures.
Auto-Correlation: Nature - Causes -Consequences - Detection - Remedial Measures.

**Module-4:     Dummy Variable and Dynamic Regression Models**

*Dummy Variable Model*: Meaning - Nature - Dummy Variable Trap - Dummy Variable Model with Single Qualitative Variable - Two Qualitative Variables - Dummy Variable Model with Mixture of Qualitative and Quantitative Variables.

*Autoregressive and Dynamic Models*: Role of Lag in Economics - Estimation Methods: Koyck's: Adaptive Adjustment and Partial Expectation Models - Almon Approach to Distributed Lag Models.

**Module-5:     Simultaneous Equation Models**

Nature - Simultaneous Equation Bias - Identification: Under - Exact - Over Identification - Rules of Identification - Order and Rank Condition of Identification - Estimation of Simultaneous Equations Models: ILS, 2SLS, 3SLS, LIMLE, FIMLE.

**References: [Please refer to the Latest Editions]**

1.  Damodar N Gujarati, *Basic Econometrics*, McGraw Hill, International Student Edition.
2.  Damodar N Gujarati, *Econometrics by Example,* Palgrave Macmillan, United Kingdom.
3.  Ghosh Sukesh K, *Econometrics- Theory and Applications*, Prentice Hall Private Ltd., New Delhi.
4.  Koutsoyiannis A., *Theory of Econometrics,* The Macmillan Press Ltd., London.

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**CERTIFICATE COURSE IN APPLIED ECONOMETRICS FOR RESEARCH**

[For Research in Social Science, Commerce & Management]

**Preamble:** This course covers the statistical foundations of econometric theory as well as econometric methods and applications. The focus of this course will be therefore on an interface between these three facets that are essential for a proper understanding of econometric applications in economic analysis.

**Module-1:    Qualitative Dependent Variable Models**

Nature of Qualitative Variables - Linear Probability Model - Logit Model - Probit Model - Tobit Model for Grouped and Ungrouped Data - Their Application in Economics.

**Module-2:    Time Series Econometrics**

Introduction - Stationary and Non-Stationary Series -  Random Walk Model - Testing of Unit Root - Co-integration - Test for Co-integration -  Engel-Granger Test -  Johansen Test - Error Correction Model -  Introduction to ARCH and GARCH Modeling - Their Application in Economics.

**Module-3:    Panel Data Models**

Why Panel Data? -  Estimation -  Fixed Effects Method -  All Coefficient Constant across Time and Individuals -  Slope Coefficients Constant but Intercept Varies across Individuals - Slope Coefficients Constant but Intercept Varies Over Individuals as Well as Time - All Coefficients Vary across Individuals - Random Effects Method - Fixed Effects v/s Random Effects Model - Hausman Test - Their Application in Economics.

**Module-4:    Empirical Demand, Production and Investment Analysis**

Static Single Equations -  Demand Analysis -  Theoretical Foundations of Demand Analysis - Utility Theory -  Tobin's Study- Static Multiple Equations - Production Function - Neoclassical Production Function -  Cobb-Douglas Production Function -  CES Production Function -  Dynamic Single Equation Model - Investment Behaviour Models -  Meyer and Kuh Model -  Kuh Model

**Module-5:    Econometric Applications in India**

Econometric Applications in Indian Demand Analysis - Indian Agriculture - Indian Industry - International Trade.

**References:** [Please refer to the Latest Editions]

1. Brooks Chris, *Introductory Econometrics for Finance,* Cambridge University Press, Cambridge.
2. Desai Meghnad, *Applied Econometrics*, McGraw Hill Publishing Company Ltd.
3. Gujarathi Damodar, *Basic Econometrics*, McGraw Hill, International Student Edition.
4. Krishna K. L., *Indian Econometrics Models*, Oxford University Press, Oxford.
5. Patterson Kerry,  *An Introduction to Applied Econometrics a Time Series Approach,* Macmillan Press.

# UNIVERSITY OF MYSORE

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

## CERTIFICATE COURSE IN RESEARCH METHODOLOGY

[For Research in Social Science, Commerce & Management]

**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.

**UNIVERSITY OF MYSORE**

**DEPARTMENT OF STUDIES IN ECONOMICS AND CO-OPERATION
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**CERTIFICATE COURSE IN 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 as 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.

**UNIVERSITY OF MYSORE**

**DEPARTMENT OF STUDIES IN ECONOMICS AND CO-OPERATION**
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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.

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**CERTIFICATE COURSE IN POLICY ANALYSIS**
**INDIAN ECONOMIC POLICIES**

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**Module-1:     Introduction to Policy Analysis**

Policy Analysis: Meaning and Definition - Public Policy - Basic Concepts and Theoretical Background for Policy Analysis: The Problem of Collective Action, Basic Economics of Markets and Human Behaviour - Welfare Economics - the Role of the State - Ethical and Political Dimensions of Policy Analysis.

**Module-2:     Steps in Policy Analysis**

(i) Verify, Define and Detail the Problem: Verifying the Problem - Definition - Developing Problem Statements - Back-of-the-Envelope Calculations - Quick Decision Analysis - Political Analysis - First Cut Policy Analysis.

(ii) Establish Evaluation Criteria: Meaning - Types of Criteria: Reliability and Validity - Economic Criteria - Equity Criteria - Technical Criteria - Political Criteria - Administrative Criteria.

(iii) Identify and Assess Alternative Policies: Generating Alternatives - Sources of Alternatives - Assessing Policy Alternatives - Forecasting - Economic Analysis - Discounting - Net Present Value - Cost-Benefit Ratios - Internal Rate of Return - Sensitivity Analysis - Risk Analysis - Political Analysis - Implementation Analysis -

(iv) Display and Distinguishing among Alternatives: *Displaying Policy Alternatives:* Decision Rules - Paired Comparisons - Grading Method, Lexicographic Ordering Non-Dominated Alternatives - Equivalent Alternatives - Weighted Decision Criteria, Groller Scorecard.

(vi) Implement, Monitor, and Evaluate the Policy: Implementation Analysis - Policy Monitoring - Policy Evaluation - Formative Evaluation -Summative Evaluation - Evaluation Design

**Module-3:     Methods in Policy Analysis**

Selecting Techniques - Cross-Cutting Methods, Identifying and Gathering Data - Library Search Methods - Interviewing for Policy Data - Quick Surveys - Assessing Information Quality - Basic Data Analysis - Communicating the Analysis.

**Module-4:     Agriculture, Industry, Finance, Tax and External Sector Policies in India**

*Agricultural Policy*: National Policies on Agriculture - Agriculture Policy Vision 2020 - Subsidies - Minimum Support Prices - Public Distribution System - Terms of Trade in Agriculture - Agricultural Policy in the Context of WTO - Impact of Agricultural Policy on Agricultural Sector.
*Industrial Policy*: Industrial Policy in India since Independence - Industrial Licensing Policy -
- New Economic Policy - Impact of Policy Changes on Industrial Production - Structural Changes - Corporate Social Responsibility (CSR)
*Financial Sector*: Banking Sector Policies - Mergers & Amalgamation - NBFIs - Insurance Sector - Financial Sector Reforms - Inflation Targeting Policy – Monetary Policy.
*Tax Policy Reforms*: Tax Policies: an Overview - Goods and Services Tax (GST) -Fiscal Policy.
*External Sector*: Trade Policy in India since Independence - EXIM Policy - Policies relating to Foreign Direct Investment - Technology Policy - International Labour Migration and Remittances.

**Module-5:     Social Sector Policies in India**

Population Policies - Demographic Dividend - Population Policy 2000 - Poverty and Unemployment Policies - MGNREGA - Unorganised Sector Labour Policies - Health Policies - Health for All. Education Policies & Right to Education (RTE) - Food Security and Right to Food - Right to Employment - Right to Information - MDGs and SDGs.

**Module-6:     Macroeconomic Policies Issues in India**

Social and Political Landscape in India - New Economic Policy 1995 - Structural Adjustments - Liberalization, Privatization (EXIT Policy) and Globalization - Impact of WTO: TRIPs, TRIMs, & GATS.

**References:** [Please refer to the Latest Editions]

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