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UNIVERSITY OF MYSORE
(Estd.1916)

CERTIFICATE COURSE
in
BASIC STATISTICS FOR
RESEARCH

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 a duration of THREE Months

2. **Number of Credits:** Number of Credits for each Course shall be 5.

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:**

   - Diploma Course is fully Self-Finance Course.

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 purse this Course.

LIST OF CERTIFICATE COURSES

Sl. No.	Title of the Certificate Course	Marks for Theory	Internal Assessment	Total Marks
1	Certificate Course in Basic Mathematics for Research	70	30	100
2	Certificate Course in Basic Statistics for Research	70	30	100
3	Certificate Course in Theory of Econometrics for Research	70	30	100
4	Certificate Course in Applied Econometrics for Research	70	30	100
5	Certificate Course in Research Methodology	70	30	100
6	Certificate Course in Statistical Software for Data Analysis	70	30	100

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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
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-Il 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 - 5: 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 - 6: 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.