Dempo Charities Trust's
DHEMPE COLLEGE OF ARTS & SCIENCE
Miramar, Panaji-Goa

Statistics and Statistical surveys using statisticalpackage R or similar software

CourseObjective:

Introduction to various statistical concepts and Introduction to Ror similar statistical software

CourseContents: Paper I and paper II

PAPER I DESCRIPTIVE STATISTICS
Types of Data: Concepts of a statistical population and sample from a population; Qualitative and quantitative data; nominal and ordinal data; cross sectional and time series data; discrete and continuous data; frequency and non- frequency data. Different types of scales - nominal, ordinal, ratio and interval.

Collection and Scrutiny of Data:
- Primary data - designing a questionnaire and a schedule; checking their consistency.
- Secondary data - its major sources including some government publications.

Complete enumeration, controlled experiments, observational studies and sample surveys. Scrutiny of data for internal consistency and detection of errors of recording. Ideas of cross-validation. .

Presentation of Data: Construction of tables with one or more factors of classification. Diagrammatic and graphical representationof grouped data. Frequency distributions, cumulative frequency distributions and their graphical representation, histogram, frequency polygon and ogives. Stem and leaf chart. Box plot.
Analysis of Quantitative Data: Univariate data-Concepts of central tendency or location, dispersion and relative dispersion, skewness and kurtosis, and their measures including those based on quantiles and moments.

Bivariate Data: Scatter diagram. Product moment correlation coefficient and its properties. Coefficient of determination.Correlationratio.Concepts of error in regression. Principle of least squares.Fitting of linear regression and related results. Fitting of curves reducible to polynomials by transformation. Rank correlation .

Multivariate data: Multiple regression, multiple correlation and partial correlation in three variables. Their measures and related results.

PAPER II
APPLIED STATISTICS
PROBABILITY THEORY
ESTIMATION AND TESTING
SAMPLE SURVEYS

Sample Surveys, Concepts of population and sample, need for sampling, Census and sample survey, basic concepts in sampling, organizational aspects of survey sampling, sample selection and sample size.
Some basic sampling methods- simple random sampling (SRS) with and with out replacement.
Stratified random sampling, Systematic sampling, ratio and regression methods of estimation under SRS.
Non sampling errors, acquaintance with the working (questionnaires, sampling design, methods followed in field investigation, principal findings etc.) of NSSO, and other agencies undertaking sample surveys.
APPLIED STATISTICS
Indian Applied Statistical System: Present official statistical system in India, Methods of collection of official statistics, their reliability and limitations, and the principal publications
containing such statistics on the topics- population, agriculture, industry, trade, price, labour and employment, transport and communications.
Demographic Methods : Sources of demographic data - census, register, adhoc survey, hospital records, demographic profiles of Indian census. Measurement of mortality and life tables- crude, death rates, infant mortality rates, death date by cause, standardized death rate, complete life table - its main features, mortality rate and probability of dying, use of survival tables.

Course outcome:

The student should be in a position to understand various concepts

in statistical techniques and statistical surveys. The student should be able to analyse the data using R or similar statistical software