

OBJECTIVES: To enable the students

- This paper deals the time series on simple description methods of data, explains the variation, forecasting the future values, control procedures.
- It gives an idea of using index numbers in a range of practical situations, limitations and uses
- The vital statistics enlighten the students in obtaining different mortality, fertility rates thus obtaining the population growth rates and construction and use of life tables in actuarial science.

COURSE LEARNING OUTCOMES:

After completion of this course, the students will know about

- 1) time series data, its applications to various fields and components of time series,
- 2) fitting and plotting of various growth curves such as modified exponential, Gompertz and logistic curve,
- 3) fitting of trend by Moving Average method,
- 4) measurement of Seasonal Indices by Ratio-to-Trend , Ratio-to-Moving Average and Link Relative methods,
- 5) Applications to real data by means of laboratory assignments.
Interpret and use a range of index numbers commonly used in the business sector

COURSE: UNIT I: TIME SERIES: Time Series and its components with illustrations, additive, multiplicative models. Trend: Estimation of trend by free hand curve method, method of semi averages. Determination of trend by least squares (Linear trend, parabolic trend only), moving averages method.

UNIT II: SEASONAL COMPONENT: Determination of seasonal indices by simple averages method, ratio to moving average, Ratio to trend and Link relative methods, Depersonalization.

UNIT III :GROWTH CURVES: Modified exponential curve, Logistic curve and Gompertz curve, fitting of growth curves by the method of three selected points and partial sums. Detrending. Effect of elimination of trend on other components of the time series

UNIT IV:INDEX NUMBERS: Concept, construction, problems involved in the construction of index numbers, uses and limitations. Simple and weighted index numbers. Laspeyres's, Paasche's and Fisher's index numbers, Criterion of a good index number, Fisher's ideal index numbers. Cost of living index number and wholesale price index number.

UNIT V:VITAL STATISTICS: Introduction, definition and uses of vital statistics, sources of vital statistics.Measures of different Mortality and Fertility rates, Measurement of population growth. Life tables: construction and uses of life tables.

TEXT BOOKS:

1. Fundamentals of applied statistics: VK Kapoor and SC Gupta.
2. BA/BSc III year paper - III Statistics - applied statistics - Telugu academy by prof.K.Srinivasa Rao, Dr D.Giri. Dr A.Anand, Dr V.Papaiah Sastry.

REFERENCE BOOKS:

1. Anuvarthita Sankhyaka Sastram - Telugu Academy.
2. Mukopadhyay, P (2011). Applied Statistics, 2nd ed. Revised reprint, Books and Allied Pvt. Ltd.
3. Brockwell, P.J. and Devis, R.A. (2003). Introduction to Time Series Analysis. Springer.
4. Chatfield, C. (2001). Time Series Forecasting., Chapman & Hall.
5. Srinivasan, K. (1998). Demographic Techniques and Applications. Sage Publications
6. Srivastava O.S. (1983). A Text Book of Demography. Vikas Publishing House

