

17HS066 COMPUTING FOR DATA ANALYTICS

Course Objectives

The objective of this course is to teach fundamental concepts and tools needed to understand the emerging role of business analytics in Organizations.

Course Outcomes

1. Learn the Big Data in Technology Perspective.
2. Understanding of the statistical procedures most often used by practicing engineers
3. Understand Forecasting methods and apply for business applications

UNIT – I

DATA ANALYTICS LIFE CYCLE: Introduction to Big data Business Analytics - State of the practice in analytics role of data scientists - Key roles for successful analytic project - Main phases of life cycle - Developing core deliverables for stakeholders.

UNIT – II

STATISTICS Sampling Techniques: Data classification, Tabulation, Frequency and Graphic representation - Measures of central value - Arithmetic mean, Geometric mean, Harmonic mean, Mode, Median, Quartiles, Deciles, Percentile - Measures of variation – Range, IQR, Quartile deviation, Mean deviation, standard deviation, coefficient

variance, skewness, Moments & Kurtosis.

UNIT – III

PROBABILITY AND HYPOTHESIS TESTING: Random variable, distributions, two dimensional R.V, joint probability function, marginal density function. Random vectors - Some special probability distribution - Binomial, Poisson, Geometric, uniform, exponential, normal, gamma and Erlang. Multivariate normal distribution - Sampling distribution – Estimation - point, confidence – Test of significance, 1 & 2 tailed test, uses of t-distribution, F-distribution, χ^2 distribution.

UNIT – IV

PREDICTIVE ANALYTICS: Predictive modeling and Analysis - Regression Analysis, Multicollinearity, Correlation analysis, Rank correlation coefficient, Multiple correlation, Least square, Curve fitting and goodness of fit.

UNIT – V

TIME SERIES FORECASTING AND DESIGN OF EXPERIMENTS :Forecasting Models for Time series : MA, SES, TSwith trend, season - Design of Experiments, one way classification, two way classification, ANOVA, Latin square, Factorial Design.

Reference Books

1. Chris Eaton, Dirk Deroos, Tom Deutsch etal., “Understanding Big Data”, McGrawHill, 2012.
2. Alberto Cordoba , “Understanding the Predictive Analytics Lifecycle”, Wiley, 2014.
3. Eric Siegel, Thomas H. Davenport , “Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die”, Wiley, 2013.
4. James R Evans, “Business Analytics – Methods, Models and Decisions”, Pearson 2013.
5. R. N. Prasad, Seema Acharya, “Fundamentals of Business Analytics”, Wiley, 2015.
6. S M Ross, “Introduction to Probability and Statistics for Engineers and Scientists”, Academic Foundation, 2011.
7. David Hand, Heiki Mannila, Padhria Smyth, “Principles of Data Mining”, PHI 2013.
8. Spyros Makridakis, Steven C Wheelwright, Rob J Hyndman, “Forecasting methods and applications”, Wiley 2013(Reprint).

Student Activity:

1. Collect temperatures of previous months and prepare a logic to estimate the temperature of next one week
2. Collect real time data and apply statistical techniques to classify it.