Subject Code	Subject Name	Credits
26CS111	COMPUTING FOR DATA ANALYTICS	4

Course Objectives:

1. To understand Data Analytics and its Life Cycle
2. To understand the fields of statistics, probability and hypothesis testing

Learning Objectives:

On successful completion of the course, students will be able to:

1. To learn Predictive analysis and time series forecasting

Unit 1 - Data Analytics Life Cycle (12 hrs.):
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 2 - Statistics (12 hrs.):
Sampling Techniques - Data classification, Tabulation, Frequency and Graphic reporesentation - 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 3 - Probability and Hypothesis Testing (12 hrs.):
Random variable, distributions, two dimensional R.V, joint probability function, marginal density function. Random vectors - Some special probability distribution - Binomial, Poison, Geometric, uniform, exponential, normal, gamma and Erlang. Multivariate normal distribution - Sampling distribuition – Estimation - point, confidence - Test of significance, 1& 2 tailed test, uses of tdistribution, F-distribution, χ 2 distribution.

Unit 4 - Predictive Analytics (12 hrs.):
Predictive modeling and Analyisis - Regression Analyisis, Multicollinearity , Correlation analysis, Rank correlation coefficient, Multiple correlation, Least square, Curve fitting and good ness of fit.

Unit 5 - Time Series Forecasting and Design of Experiments (12 hrs.):
Forecasting Models for Time series : MA, SES, TS with 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 et al., “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.