NOC:Introduction to Data analytics - Video course

COURSE OUTLINE

Data Analytics is the science of analyzing data to convert information to useful knowledge. This knowledge could help us understand our world better, and in many contexts enable us to make better decisions. While this is broad and grand objective, the last 20 years has seen steeply decreasing costs to gather, store, and process data, creating an even stronger motivation for the use of empirical approaches to problem solving. This course seeks to present you with a wide range of data analytic techniques and is structured around the broad contours of the different types of data analytics, namely, descriptive, inferential, predictive, and prescriptive analytics.

COURSE DETAIL

Week. No	Topics
1.	**Descriptive Statistics** Introduction to the course Descriptive Statistics Probability Distributions
2.	**Inferential Statistics** Inferential Statistics through hypothesis tests Permutation & Randomization Test
3.	**Regression & ANOVA** Regression ANOVA(Analysis of Variance)
4.	**Machine Learning: Introduction and Concepts** Differentiating algorithmic and model based frameworks Regression : Ordinary Least Squares, Ridge Regression, Lasso Regression, K Nearest Neighbours Regression & Classification
5.	**Supervised Learning with Regression and Classification techniques -1** Bias-Variance Dichotomy

NP-TEL

NPTEL

http://nptel.ac.in

Management

Pre-requisites:

This course requires that you are familiar with high-school level linear algebra, and calculus. Knowledge of probability theory, statistics, and programming is desirable.

Coordinators:

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	Model Validation Approaches Logistic Regression Linear Discriminant Analysis Quadratic Discriminant Analysis Regression and Classification Trees Support Vector Machines
6.	**Supervised Learning with Regression and Classification techniques -2** Ensemble Methods: Random Forest Neural Networks Deep learning
7.	**Unsupervised Learning and Challenges for Big Data Analytics** Clustering Associative Rule Mining Challenges for big data anlalytics
8.	**Prescriptive analytics** Creating data for analytics through designed experiments Creating data for analytics through Active learning Creating data for analytics through Reinforcement learning

References:

[1] Hastie, Trevor, et al.;The elements of statistical learning. Vol. 2. No. 1. New York: Springer, 2009.

[2] Montgomery, Douglas C., and George C. Runger.;Applied statistics and probability for engineers. John Wiley & Sons, 2010