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# Data Science Course Details

By [A1Training\(PT\)](#)

Course Name	Data Science
Category	DS
Mode Of Classes	Online/Offline
Demo Classes	At Your Convenience
Training Methodology	20% Theory & 80% Practical
Course Duration	50-65 Hours
Class Availability	Weekdays & Weekends
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## Why A1Training?

- Training by highly experienced and certified professionals
- No slideshow (PPT) training, fully Hand-on training
- Interactive session with interview QA's
- Real-time projects scenarios & Certification Help
- Most competitive & affordable course fees
- Placement support for all courses
- List of established & satisfied clients & students ([Visit our website for reviews](#)).



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## *Data Science*

### **Statistical Analysis**

Data types and its measures

Random Variables, its applications with exercises

Probability – Applications with examples

Probability distribution with examples

Sampling Funnel – why and how

Measures of central tendency

Mean, Median, Mode

Measures of dispersion

Variance, Standard Deviation, Range – Its derivation

Measures of Skewness & Kurtosis – Graphical representation and application

Various graphical representation of data for analysis

Bar Chart

Histogram

Box Plot

Scatter Plot

Continuous Probability distribution

Standard Normal distribution / Z distribution

F – distribution

Students T distribution

Chi Square distribution

Discrete probability distribution

Binomial distribution

Negative Binomial distribution

Poisson distribution

Computing probability from Normal

Distribution

Building Normal Q-Q plots & its interpretation

Central Limit Theorem for sampling variations

Confidence interval – Computation and analysis

### **Hypothesis Testing -What and How**

Formulating a hypothesis statement

Parametric tests

1 sample, 2 sample t test

1 sample Z test

1 Proportion, 2 Proportion test

Paired t test

One way ANOVA

Chi – Square test

Nonparametric Tests

1 sample Sign test

Mann – Whitney test

Kruskal – Wallis Test

Mood's Median test



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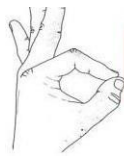
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## **Regression Analysis**

Measure of correlation coefficient and its analysis  
Regression model using “Ordinary Least Squares”  
Coefficient of determination as a strength of a model  
Prediction interval and Confidence interval  
Prerequisites to Regression  
Linearity  
Independent  
Normally distributed  
Equal variance  
Regression techniques  
Linear Regression  
Simple  
Multiple  
Logistic Regression  
Simple  
Multiple  
Model building using regression  
Measures of accuracy  
Model improvement techniques  
Analysis of regression output with case studies  
Imputation Techniques  
Listwise, Pairwise Deletion  
Mean/Mode Substitution  
Regression Imputation  
Hot Deck, KNN Imputation

## **Data Mining / Machine Learning**

Supervised vs Unsupervised  
Basic Matrix Algebra  
Data Mining Unsupervised  
Clustering – its applications and limitation  
Hierarchical  
Non Hierarchical (K-Means)  
Affinity Analysis / Association Rules  
Measures of association  
Support, Confidence, Lift Ratio  
Sequential pattern mining  
Recommender Systems  
Methods and tricks of the trade  
Dimension Reduction Techniques  
Principal Component Analysis  
Singular Value Decomposition  
Data Mining – Supervised  
Black Box demystified  
Neural Networks  
Support Vector Machines  
Classification / Pattern mining  
K Nearest Neighbor  
Naive Bayes



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Decision Tree & Random Forest  
Decision Tree C 5.0

## **Text Mining & Natural Language Processing**

Text extraction from webpage  
Word clouds – analysis with context  
Negative and positive words  
NLP  
Latent Dirichlet Allocation (LDA)  
Structured Extraction  
Emotion Mining

## **Forecasting**

Strategy for Forecasting  
Analysis by Graphical Representation  
Components in a time series data  
Plots of Time series data  
Autocorrelation function / Correlogram  
Visualizations – How to perform  
Methods of Forecast  
Naïve methods  
Simple and Moving Average  
Model driven  
Regression Model – Linear,  
Exponential, Quadratic  
Econometric models  
Seasonality factored model  
Autoregressive model  
Random Walk  
Data Driven  
Smoothing  
Exponential Smoothing  
Advanced Exponential Smoothing  
Holt's Method  
Winter Method  
AR, MA, ARIMA models  
Analysis of errors in forecast  
Skewness of Error  
Types of error measure  
Mean Error (ME)  
Mean Absolute Deviation (MAD)  
Mean Squared Error (MSE)  
Root Mean Squared Error (RMSE)  
Mean Percentage Error (MPE)  
Mean Absolute Percentage Error (MAPE)

## **Data Visualization**

3 important principles of Visualization  
Lie Factor  
Using consistent scales  
Presenting data in the context



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Data-ink ratio  
Tufte's Graphical Integrity Rules  
Tufte's Principles for Analytical Design  
Various chart junks & how to avoid chart junks  
Dashboards –Good, Bad & Ugly  
Affordance Theory

## **Tableau**

Introduction to the various file types  
How to access help  
Quick introduction to the user interface in Tableau  
How to connect to the data sources  
How to join the various data sources  
How to create data visualization using Tableau feature "Show Me"  
Reorder & remove visualization fields  
How to sort & filter data  
How to create a calculated field  
How to perform operations using cross-tab  
Working with workbook data & worksheets  
How to create a packaged workbook  
Creating various charts  
Creating maps & setting map options  
Creating dashboards & working with Dashboard

## **R & R Studio**

Introduction to R  
Working with Packages  
Performing various regression and data mining techniques using R Studio

## **NodeXL**

Introduction to NodeXL and its application in Network Analysis

## **XLMiner**

Using XLMiner for performing various forecasting techniques

## **Python**

Performing various regression and data mining Techniques using Python

## **Minitab**

Performing Hypothesis testing using Minitab