Analyt IQ Learning

DATA SCIENCE WITH PYTHON

Job Oriented Program

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Develop a passion for learning. If you do, you will never cease to grow.

– Anthony J. D'Angelo

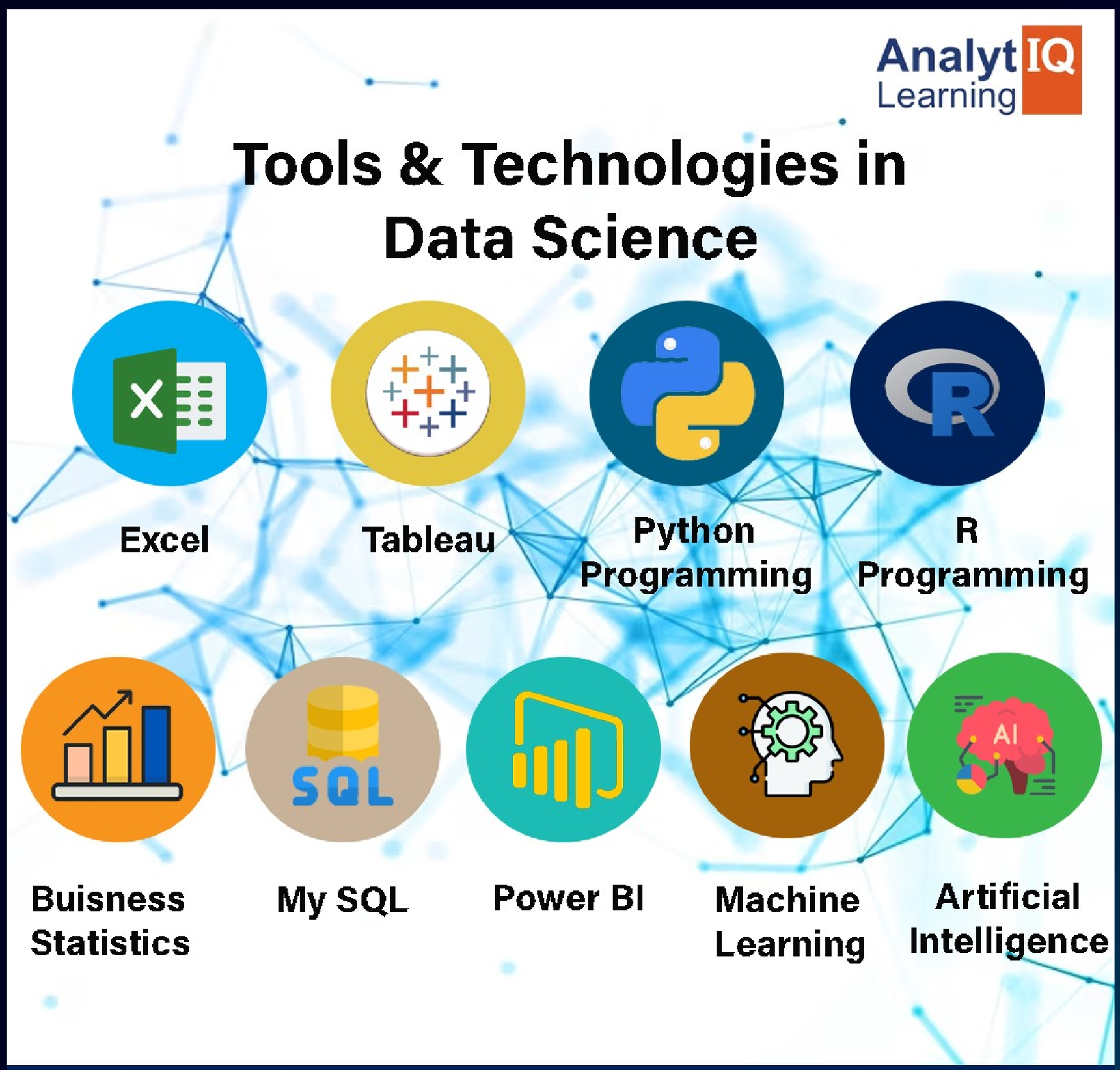
About Us?

We are a group of individuals who have worked in the field of the IT industry in various segments. We provide training in software development, software testing, web development, and digital marketing. Our style of training combines high-quality theoretical education with extensive practical exposure to live projects along with extensive placement assistance.

Why we?

- we have more than 9+ years of experienced trainers.
- We deliver live interactive training to students
- 100% Placement Assurance
- we provide mock interviews, soft skills interview sessions from industry experts.
- Industry ready syllabus.

Modules We Cover



COURSE DURATION & ELIGIBILITY

Duration:
Weekday Batches - 5-6 Months
Eligibility:
Bsc, BCS, BCA, BE, B.Tech, MSc, MCS, MCA, M.Tech
(No Previous Programming Knowledge Required)

Data Science Course Syllabus

Fundamentals of Statistics & Data Science

1. Fundamentals of Data Science and Mathematical Statistics

- Introduction to Data Science
- Need of Data Science
- BigData and Data Science
- Data Science and machine learning
- Data Science Life Cycle
- Data Science Platform
- Data Science Use Cases
- Skill Required for Data Science

2. Mathematics For Data Science

- Linear Algebra

1. Vectors
2. Matrices

- Optimization

1. Theory Of optimization
2. Gradients Descent

3. Introduction to Statistics

- Descriptive vs Inferential Statistics
- Types of data
- Measures of central tendency and dispersion
- Hypothesis & inferences
- Hypothesis Testing
- Confidence Interval
- Central Limit Theorem

4. Probability and Probability Distributions

- Probability Theory
- Conditional Probability
- Data Distribution
- Distribution Functions

1. Normal Distribution
2. Binomial Distribution

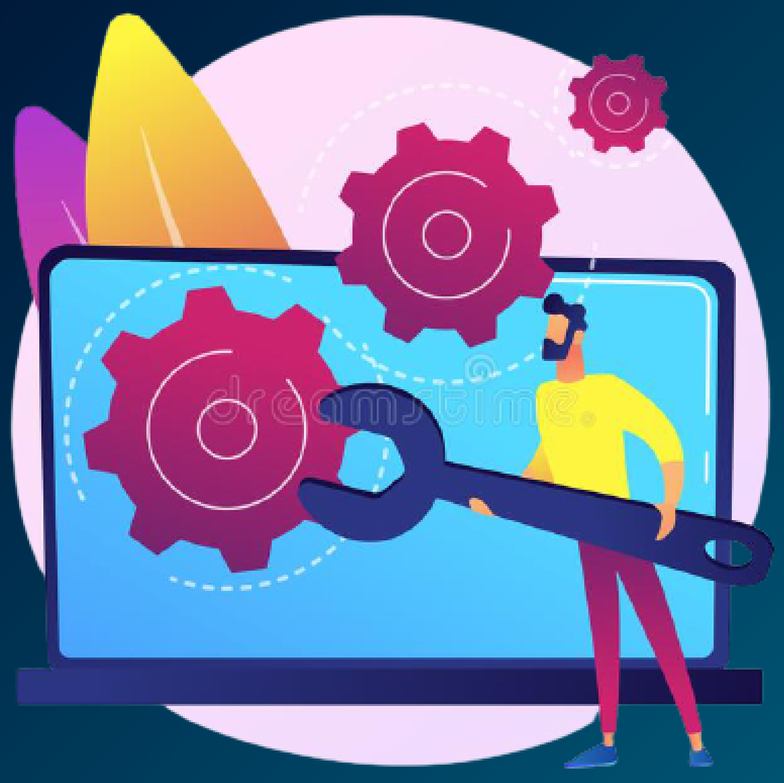
MS EXCEL: Data handling on SPREADSHEET

1. Using a Spreadsheet

- What is Excel?
- Why Use Excel? Excel Overview
- Excel Ranges, Selection of Ranges
- Excel Fill, Fill Copies, Fill Sequences, Sequence of Dates
- Excel adds, move, and delete cells
- Excel Formulas
- Relative and Absolute References

2. FUNCTIONS

- SUM
- AVERAGE
- COUNT
- MAX & MIN
- RANDBETWEEN
- TRIM
- LEN
- CONCATENATE
- TODAY & NOW



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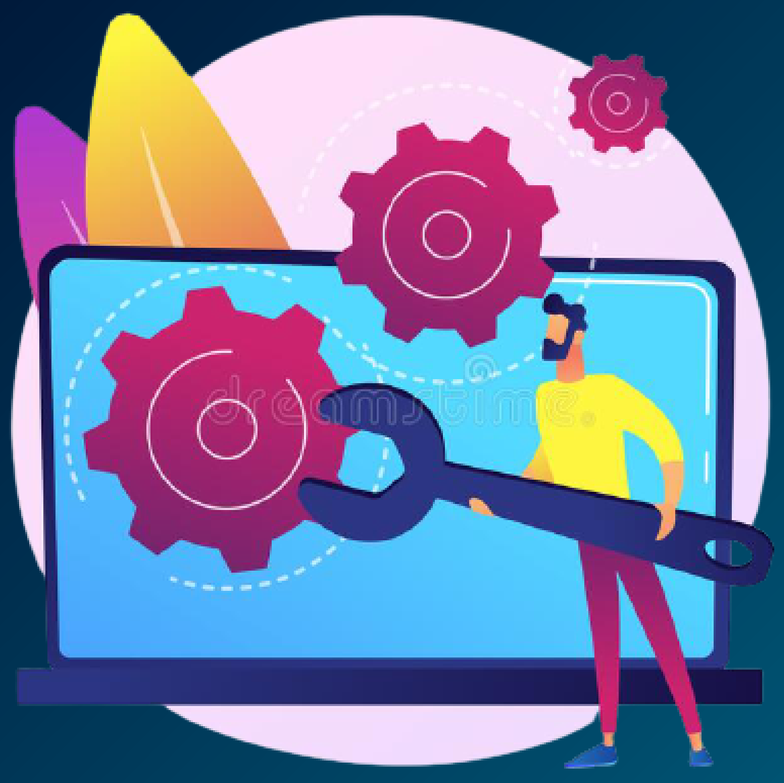

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MS EXCEL: Data handling on SPREADSHEET

3. ADVANCED FUNCTIONS

- Excel IF Function
- Excel If Function with Calculations
- How to use COUNT, COUNTIF, and COUNTIFS Function?
- Excel Advanced If Functions

4. DATA VISUALIZATION

- Excel Data Analysis - Data Visualization
- Visualizing Data with Charts
- Chart Elements and Chart Styles
- Data Labels
- Quick Layout

RDBMS: SQL in detail

- An Introduction to RDBMS & SQL
- Data Retrieval with SQL
- Pattern matching with wildcards
- Basics of sorting
- Order by clause
- Aggregate functions
- Group by clause
- Having clause
- Nested queries
- Inner join
- Multi join
- Outer join
- Adding and Deleting columns
- Changing column name and Data Type
- Creating Table from existing Table
- Changing Constraints Foreign key

Python for Data Science

1. AN INTRODUCTION TO PYTHON

- Why Python, its Unique Feature, and where to use it?
- Python Environment Setup/shell
- Installing Anaconda
- Understanding the Jupyter notebook
- Python Identifiers, Keywords
- Discussion about installed modules and packages

2. CONDITIONAL STATEMENT, LOOPS AND FILE HANDLING

- Python Data Types and Variable
- Condition and Loops in Python
- Decorators
- Python Modules & Packages
- Python Files and Directories manipulations
- Use various files and directory functions for OS operations

3. PYTHON CORE OBJECTS & FUNCTIONS

- Built-in modules (Library Functions)
- Numeric and Math' s Module
- String/List/Dictionaries/Tuple
- Complex Data structures in Python
- Python built-in function
- Python user defined functions

4. INTRODUCTION TO NUMPY

- Array Operations
- Arrays Functions
- Array Mathematics
- Array Manipulation
- Array I/O
- Importing Files with Numpy

Data Science Course Syllabus

5. DATA MANIPULATION WITH PANDAS

- Data Frames
- I/O
- Selection in DFs
- Retrieving in DFs
- Applying Functions
- Reshaping the DFs – Pivot
- Combining DFs
- Merge, Join
- Data Alignment

6. SCIPY

- Matrices Operations
- Create matrices
- Inverse, Transpose, Trace, Norms, Rank, etc
- Matrices Decomposition
- Eigen Values & vectors
- SVDs

7. VISUALIZATION WITH SEABORN

- Seaborn Installation
- Introduction to Seaborn
- Basics of Plotting
- Plots Generation
- Visualizing the Distribution of a Dataset
- Selection color palettes

8. VISUALIZATION WITH MATPLOTLIB

- Matplotlib Installation
- Matplotlib Basic Plots & it' s Containers
- Matplotlib components and properties
- Pylab & Pyplot
- Scatter plots
- 2D Plots
- Histograms
- Bar Graphs
- Pie Charts
- Box Plots
- Customization
- Store Plots

9. SCIKIT LEARN

- Basics
- Data Loading
- Train/Test Data generation
- Preprocessing
- Generate Model
- Evaluate Models

10. DESCRIPTIVE STATISTICS

- Observations, variables, and data matrices
- Types of variables
- Measures of Central Tendency
- Arithmetic Mean / Average

1. Merits & Demerits of Arithmetic Mean and Mode
2. Merits & Demerits of Mode and Median
3. Merits & Demerits of Median Variance

11. PROBABILITY BASICS

- Notation and Terminology
- Unions and Intersections
- Conditional Probability and Independence

12. PROBABILITY DISTRIBUTIONS

- Random Variable
- Probability Distributions
- Probability Mass Function
- Parameters vs. Statistics
- Binomial Distribution
- Poisson Distribution
- Normal Distribution
- Standard Normal Distribution
- Central Limit Theorem
- Cumulative Distribution function

Data Science Course Syllabus

13. TESTS OF HYPOTHESIS
- Large Sample Test
- Small Sample Test
- One Sample: Testing Population Mean
- Hypothesis in One Sample z-test
- Two Sample: Testing Population Mean
- One Sample t-test - Two Sample testest
- Paired t-test
- Hypothesis in Paired Samples t-test
- Chi-Square test

14. DATA ANALYSIS
- Case study- Netflix
- Deep analysis on Netflix data

Machine learning

1. EXPLORATORY DATA ANALYSIS
- Data Exploration
- Missing Value handling
- Outliers Handling
- Feature Engineering

2. FEATURE SELECTION
- Importance of Feature Selection in Machine Learning
- Filter Methods
- Wrapper Methods
- Embedded Methods

3. MACHINE LEARNING: SUPERVISED ALGORITHMS CLASSIFICATION
- Introduction to Machine Learning
- Logistic Regression
- Naïve Bays Algorithm
- K-Nearest Neighbor Algorithm
- Decision Trees

1. SingleTree
2. Random Forest

- Support Vector Machines
- Model Ensemble
- Model Evaluation and performance

1. K-Fold Cross-Validation
2. ROC, AUC, etc...

- Hyper parameter tuning

1. Regression
2. classification

4. MACHINE LEARNING: REGRESSION
- Simple Linear Regression
- Multiple Linear Regression
- Decision Tree and Random Forest Regression

5. MACHINE LEARNING: UNSUPERVISED LEARNING ALGORITHMS
- Similarity Measures
- Cluster Analysis and Similarity Measures

6. ENSEMBLE ALGORITHMS
- Bagging
- Boosting
- Voting
- Stacking
- K-means Clustering
- Hierarchical Clustering
- Principal Components Analysis
- Association Rules Mining & Market Basket Analysis

7. RECOMMENDATION SYSTEMS
- Collaborative filtering model
- Content-based filtering model.
- Hybrid collaborative system

Data Science Course Syllabus

Artificial Intelligence & Deep Learning

1.ARTIFICIAL INTELLIGENCE

- An Introduction to Artificial Intelligence
- History of Artificial Intelligence
- Future and Market Trends in AI
- Intelligent Agents – Perceive-Reason-Act Loop
- Search and Symbolic Search
- Constraint-based Reasoning
- Simple Adversarial Search (Game-Playing)
- Neural Networks and Perceptions
- Understanding Feedforward Networks
- Boltzmann Machines and Autoencoders
- Exploring Backpropagation

2.DEEP NETWORKS & STRUCTURED KNOWLEDGE

- Understanding Sensor Processing
- Natural Language Processing
- Studying Neural Elements
- Convolutional Networks
- Recurrent Networks
- Long Short-Term Memory (LSTM) Networks

3.NATURAL LANGUAGE PROCESSING

- Natural Language Processing
- NLP in Python
- Studying Deep Learning
- Artificial Neural Networks
- ANN Intuition
- Plan of Attack
- Studying the Neuron
- The Activation Function
- Working of Neural Networks
- Exploring Gradient Descent
- Stochastic Gradient Descent
- Exploring Back propagation

4.ARTIFICIAL AND CONVENTIONAL NEURAL NETWORK

- Understanding Artificial Neural Network
- Building an ANN
- Building Problem Description
- Evaluation the ANN
- Improving the ANN
- Tuning the ANN

5.IMAGE PROCESSING / MACHINE VISION

- Image basics
- Loading and saving images
- Thresholding
- Bluring
- Masking
- Image Augmentation

6.CONVENTIONAL NEURAL NETWORKS

- CNN Intuition
- Convolution Operation
- ReLU Layer
- Pooling and Flattening
- Full Connection
- Softmax and Cross-Entropy
- Building a CNN
- Evaluating the CNN
- Improving the CNN
- Tuning the CNN

7.RECURRENT NEURAL NETWORK

- Recurrent Neural Network
- RNN Intuition
- The Vanishing Gradient Problem
- LSTMs and LSTM Variations
- Practical Intuition
- Building an RNN
- Evaluating the RNN
- Improving the RNN
- Tuning the RNN

Data Science Course Syllabus

8.TIME SERIES DATA

- Introduction to Time series data
- Data cleaning in time series
- Pre-Processing Time-series Data
- Predictions in Time Series using ARIMA, Facebook Prophet models.

Machine Learning in Cloud

MACHINE LEARNING FEATURES & SERVICES

- Using python in Cloud
- How to access Machine Learning Services
- Lab on accessing Machine learning services
- Uploading Data
- Preparation of Data
- Applying Machine Learning Model
- Deployment by Publishing Models using AWS or other cloud computing

Data Visualization with Tableau

1.INTRODUCTION TO DATA VISUALIZATION & POWER OF TABLEAU

- Architecture of Tableau
- Product Components
- Working with Metadata and Data Blending
- Data Connectors
- Data Model
- File Types
- Dimensions & Measures
- Data Source Filters
- Creation of Sets

2.SCATTER PLOT

- Gantt Chart
- Funnel Chart
- Waterfall Chart
- Working with Filters
- Organizing Data and Visual Analytics
- Working with Mapping
- Working with Calculations and Expressions
- Working with Parameters
- Charts and Graphs
- Dashboards and Stories

Our Students are Working with Top Brands Like

Accenture	Gurucul	Mphasis	Symantec
BMC Software	HSBC	Neilhant	TCS
Cognizant	Infosys	OSI	Ubisoft
Deloitte	JP morgan	Persistant	Vritti Software
EQ Tech	KPIT	Quick Heal	Wipro
Fiserv	L&T Infotech	Raja Software	Xalted
Yardi Software	Zensar and 250+ Companies		

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