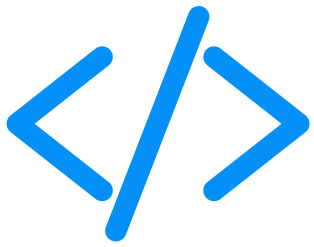
Data Science

Course Structure

CODENERA

MAKE IMAGINATION POSSIBLE



codenera.in

MS-Excel

- Introduction to Excel and Installation
- Data Cleaning and Manipulation Basics in Excel
- Formulas and Functions for Data Analytics
- Creating Charts and Visualizations
- Pivot Tables and Dashboards
- Macros for Automation
- Practice Activity: Create an Interactive Excel Dashboard

Power BI

- Introduction to Power BI and Installation Guide
- Loading and Preparing Data in Power BI
- Data Modeling in Power BI
- Creating Visualizations and Reports
- DAX (Data Analysis Expressions) Basics
- Publishing and Sharing Dashboards
- Practice Activity: Build and Share a Dashboard (Hands-on)

SQL for Data Management

- Introduction to SQL and Installing MySQL
- Writing Basic SQL Queries
- Aggregating and Grouping Data in SQL
- Working with Joins in SQL
- Advanced SQL Techniques (Subqueries, Window Functions)
- Practice Activity: Run Queries on a Sample Database (Hands-on)

Python for Data Science

- Introduction to Python and Installation
- Basic Python Programming
- Working with Pandas for Data Manipulation
- Data Visualization in Python (Matplotlib, Seaborn)
- Practice Activity: Perform Data Analysis on a Dataset

Working with data (EDA)

- Introduction to Data and EDA (Exploratory Data Analysis)
- Data Cleaning and Transformation Techniques
- Analyzing Distributions and Relationships
- Practice Activity: Perform EDA on a Real Dataset (Hands-on)

Statistics for Data Science

- Introduction to Descriptive Statistics (Mean, Median, Mode, etc.)
- Probability Basics and Distributions
- Inferential Statistics (Hypothesis Testing, Confidence Intervals)
- Practice Activity: Analyze a Dataset Using Statistical Methods

Version Control with GIT

- **Introduction to Git and GitHub Installation**
- **Basic Git Commands (Clone, Commit, Push)**
- **Practice Activity: Collaborate on a Data Project Using Git (Hands-on)**

AWS

- AWS and Cloud Computing Introduction
- AWS Fundamentals
- Compute Services
- Deployment and Management

Machine Learning Fundamentals

- Understanding the principles of machine learning
- Supervised, unsupervised, and semi-supervised learning
- Model evaluation and validation techniques

Machine Learning Algorithms

- Regression
- Linear Regression
- Logistic Regression
- Decision Trees and Random Forests
- Support Vector Machines (SVM)
- K-Nearest Neighbors (KNN)
- Clustering algorithms (K-means, Hierarchical clustering)
- Principal Component Analysis (PCA)

Model Evaluation and Selection

- Cross-validation techniques
- Hyperparameter tuning

Feature Engineering

- Handling missing data
- Feature scaling and normalization
- Feature selection techniques

Natural Language Processing (NLP) with Python

- Text preprocessing
- Text classification and sentiment analysis
- Word embeddings (Word2Vec, GloVe)

Time Series Analysis

- Dealing with time-stamped data
- Seasonal decomposition
- Forecasting using ARIMA and SARIMA

Deep Learning with TensorFlow/Keras

- Introduction to neural networks
- Building and training neural networks
- Convolutional Neural Networks (CNN) and Recurrent Neural Networks (RNN)

Django Framework

End to End With Project

Capstone Project

- 1. Fake News Detection Using Python+ML
- 2. Email Spam detection using Python+ML
- 3. Face Detection Using Python+ML
- 4. Image Classification for Medical Diagnosis