

Course Curriculum : Data Science

Module 1

Starting with Data science Introduction, we'll start with the basics of Python to build the foundation. This will include basics of data types, variables, conditionals, loops and different patterns.

- Data Science Introduction
- Introduction to Python
- Conditionals and Loops
- Patterns

Module 2

We'll cover major concepts in python i.e. Strings, List, Tuples, Dictionaries and Sets in detail along with various coding questions.

- More on Loops
- Strings, Lists & 2D Lists
- Functions *Tuples, Dictionaries and Sets

Module 3

Starting with OOPs of Python, we'll start with working over different type of files and datasets using Numpy and Pandas.

- OOPs
- Working with Files
- Advance Python - NumPy & Pandas

Module 4

After learning how to open and read files in the last section, we'll learn how to visualise data by plotting different graphs using matplotlib. After completing this, we'll start learning about Relational Databases and SQL. We'll also learn indexing and how to fetch a relational database using Python.

- Plotting Graphs using Matplotlib
- Project: Case Study
- Basic SQL
- Advanced SQL
- Indexing and SQLite with Python

Module 5

In this section, we'll learn how to collect data which is not present locally. We'll gather data by calling different APIs using requests library and by scraping different websites using BeautifulSoup and Selenium.

- APIs
- API Authentication - OAuth
- Project : Zomato API
- Web Scraping - BeautifulSoup
- Web Scraping - Basic Selenium

Module 6

After learning data collection from different sources, we'll proceed with Data Visualisation. Here we'll first visualise data using our Python code using Seaborn Library and then we'll learn an analytic tool called Tableau to visualise our data faster.

- Web Scraping - Advanced Selenium
- Project : Instabot (Instagram Bot)
- Basic Tableau
- Advance Tableau
- Seaborn

Module 7

Next step is to learn how can we clean our data to remove all the clutter and wrong values to improve our predictions and accuracy. We'll also learn few mathematical concepts to better understand machine learning algorithms and their derivation.

- Data Cleaning (Regular Expressions)
- Descriptive Statistics
- Inferential Statistics
- Hypothesis Testing

Module 8

Beginning with an in-depth session on Machine Learning and its application areas, we will move towards the basic algorithms used in Supervised Learning, their concept, maths and coding them from scratch and will be doing projects using them.

- Introduction to Machine Learning
- Linear Regression
- MultiVariable Regression and Gradient Descent
- Feature Scaling
- Project: Gradient Descent
- Logistic Regression
- Project: Logistic Regression

Module 9

We will move to the advanced algorithms of Supervised Learning as the course progresses. We will learn about important in-depth algorithms like Decision Trees, Random Forests, Naive Bayes, KNN and SVM.

- Classification Measures
- Decision Trees - 1
- Decision Trees - 2
- Project: Decision Tree Implementation
- Random Forests
- Naive Bayes
- Project: Text Classification
- K Nearest Neighbours
- SVM

Module 10

We will continue with advanced algorithms of Supervised Learning in this section of the course and will be working on interesting projects. A primer in the supporting concepts of Machine Learning, Data Handling, Feature Extraction, Selection and Image Analysis will be provided.

- PCA - 1
- PCA - 2
- Project : Cifar10
- NLP - 1
- NLP - 2
- Project - Twitter Sentiment Analysis

Module 11

Here we will cover the topics of Machine Learning and Artificial Intelligence - Deep Learning and its applications. Starting with the basics of Neural Networks and how to construct Deep Networks, the different areas of Deep Learning along with possible projects in them will be covered.

- Neural Networks - 1
- Neural Networks - 2
- Tensor Flow
- Keras

Module 12

Continuing with Deep learning we will cover Convolutional Neural Networks and Recurrent Neural Networks.

- CNN - 1
- CNN - 2
- RNN
- LSTM

Module 13

In this segment our focus will be on introduction to Unsupervised Learning and its application areas, the basic concept of Clustering, Flat and Hierarchical will be introduced. Popular unsupervised learning algorithms will be covered along with project implementations.

- Introduction to Unsupervised Learning
- Clustering - Flat and Hierarchical
- KMeans
- K-Medoids
- Git

Projects

Projects that you can take.

- Case Study - Indian Startups
- Zomato API
- Web Scraping : InstaBot
- Decision Tree Implementation
- Text Classification
- Cifar10
- Twitter Sentiment Analysis
- Image caption generator
- Music Note Generation and others