



# Data Science using Python

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## Program Overview:

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Our Data Science using Python course equips you with the fundamentals of Python programming and the essential skills to extract valuable insights from data using powerful Python libraries. Whether you're new to programming or looking to enhance your data analysis capabilities, this course provides the tools and knowledge needed to succeed in the data-driven world. Join us and transform data into actionable intelligence.

## Program Features:

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- › Self-Paced videos
- › Live Classes & Doubt Clearing Sessions
- › Industry Based Case Studies
- › Assignments & Quizzes
- › Project Assessment

## Mode of Delivery

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- › Self-Paced Videos - **12 Hours**
- › Live Lectures - **11 Hours**
- › Short Learning Material - **4 Hour**
- › Capstone Project/Case study - **2 Hours**
- › Assessments & Assignments - **1 Hour**

# Instructor Details



**Rakhee Das**  
**(Faculty at NMIMS)**

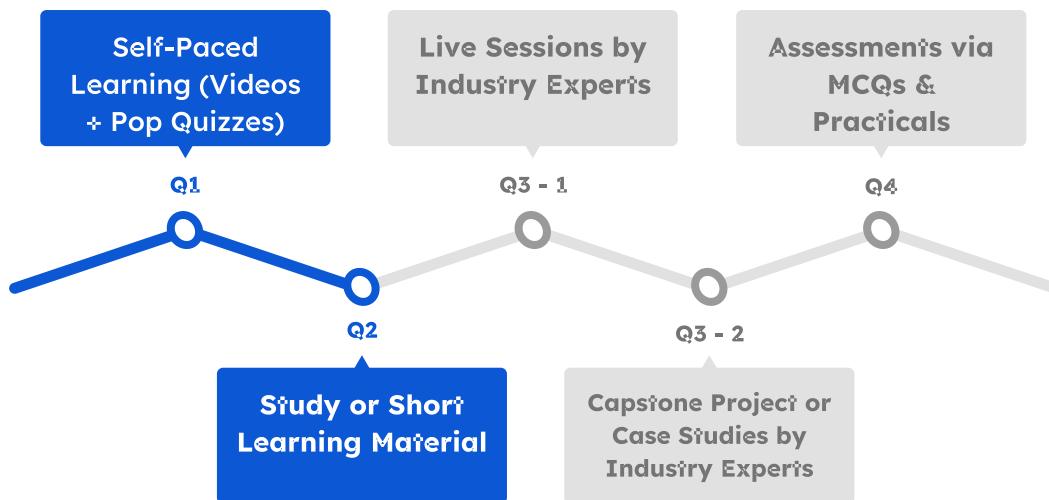
With 15+ years in Engineering Education and EdTech, Dr. Das excels in curriculum design, teacher training, project leadership, and research (Scopus, Springer, IEEE). Passionate about technical writing and machine learning, Dr. Das holds a PhD and specializes in Python and Deep Learning.

**Rocky Jagtiani**  
**(Corporate Trainer)**

With 18+ years of experience, Mr. Jagtiani has trained over 18,000 professionals in core programming, Python, Data Science, ML, and AI. A skilled trainer and content developer in Databases and Data Science, Mr. Jagtiani is passionate about ML/NLP and IT recruitment.



# Course Structure



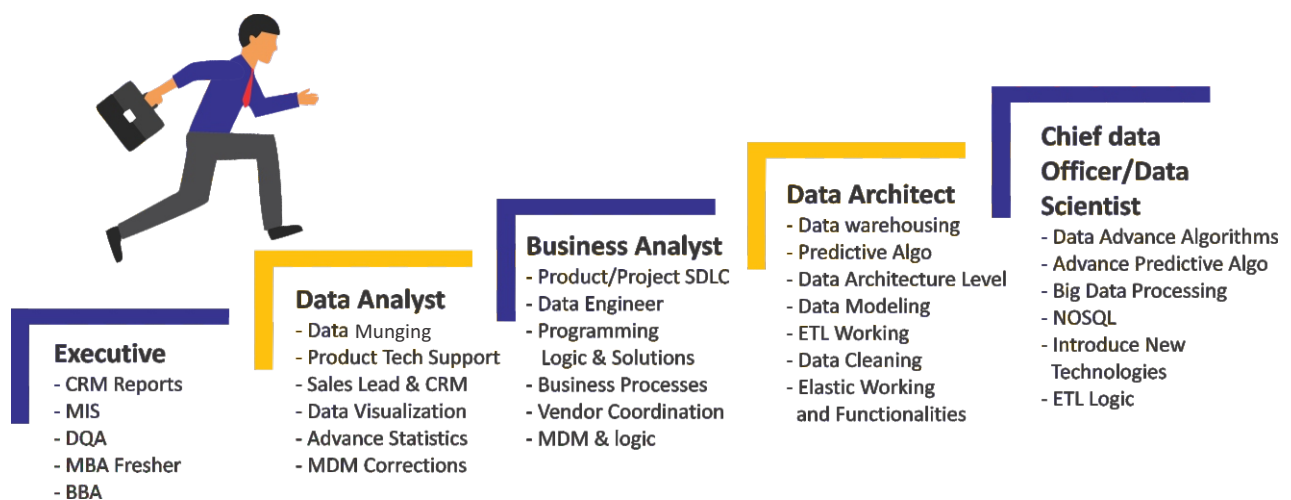
## Program Ideal For

- > Students from IT/CS Background
- > Students aspiring to build a career in data analytics and data science
- > Students aspiring to build a career in Database management
- > Anyone wanting to learn analytics/MIS

## Learning Outcomes

- > Hands-on experience in SQL Python
- > Programming Excel and Advanced Excel
- > Machine Learning
- > Supervised Learning
- > Unsupervised Learning
- > Dashboard creation with PowerBI
- > Exploratory data analysis with Numpy, Pandas
- > Extract Transform
- > Load with Pandas

## Your Pathway To Success!



# Course Details

## Week 1 :

- 1. Overview of Python:** print() statement, how to give comments, what's the use of "" or "", declaring variables of different types, two ways to format String -> {} and .format(), different types of escape sequences, order of MATH operations -> PEMDAS, use input() to get input, use cmd line arguments i.e. argv to get input, define and call functions.
- 2. Data-types & Operators in Python:** Python Numbers : (long)int, float, complex no. , Python String, Python Lists, Python Tuples, Python Dictionary, Types of Operators - Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators; Decision making, Loops, Iterator & Generator.
- 3. Project:** Web Scrapping Tool and Simplified Hotel Bill
- 4. Build-in functions of Python Data-types:** Number build-in functions, String build-in functions, List build-in functions, Tuple build-in functions, zip() and use of zip(), Properties of Dictionary Keys, dictionary build-in functions, Difference between shallow and deep copy, Date & time functions
- 5. Functions, Modules & Packages:** Syntax of user-defined function, Pass by Reference vs. Pass by Value, Function Arguments - a> Required arguments, b> Keyword arguments, c> Default arguments, d> Variable-length arguments; use pointer notation(\*): to accept many arguments, Anonymous Functions: use lambda keyword, not, def keyword, Scope of Variables - a> Global variables, b> Local variables; Concept of a module, from...import <name> Statement, from...import \* Statement, Executing Modules as Scripts, Locating Modules, dir() Function, globals() and locals(), Packages, don't confuse between importing from a package w.r.t importing from a module, install packages
- 6. Reading/Writing from files:** Opening and Closing Files, Reading from files, Writing to files, Check current position of file pointer, Copy from one file to another, Renaming file, Deleting file/s, Functions to operate with directories - a> mkdir() Method, b> chdir() Method, c> getcwd() Method, d> rmdir() Method.
- 7. Project:** Simple Invoicing Program
- 8. Assertions & Exceptions: Assertions:** when and why to use? About Exceptions, except Clause with no Exceptions, except Clause with multiple Exceptions, try-finally Clause, Argument of an Exception, Raising an Exception, User-Defined Exceptions, Coding Exercises.
- 9. Live Session:** Doubt clearing session the learnings from the self paced videos.
- 10. Core Python Programming Assessment**

## Week 2 :

### 1. Introduction to Data Science

- › We understand the definition of Data Science in depth, role of a Data Scientist and the required skillsets
- › Understand different real life usecases of data science

### 2. Numpy

- › NumPy is the fundamental package for scientific computing in Python.
- › Understand use of Numpy arrays, create 1d & 2d arrays and use basic numpy functions.
- › Understand different Universal Functions in numpy.
- › Understand coin simulation using numpy functions.
- › Understand how to simulate a Stock Returns.
- › Analyse runs scored by Sachin & Dravid among 224 Test matches.

### 3. Data Visualization using Matplotlib

- › Matplotlib is a comprehensive library for creating static, animated, and interactive visualizations in Python
- › How to make subplots and play with graph format options
- › How to customise our visualisation
- › How to annotate our graphs
- › How to make bar graphs, histograms & other visualisations used in data analysis

### 4. Live Session: Doubt clearing session the learnings from the self paced videos.

## Week 3 :

### 1. Analysing data using Pandas

- › Where and how to use PANDAS data Science Library?
- › Series and Dataframes. Code built-in dataframe functions.
- › Do problem solving using Pandas data frames.
- › Work on different datasets. Analyse data and extract information.
- › Solve tricky problems on Wine dataset using pandas dataframes and pandas functions.
- › Understand the solutions to analysing datasets using pandas data frames.
- › GROUP BY functionality. Solve problems by grouping data according to different criteria.
- › Solve tricky problems on Wine dataset using pandas dataframes and pandas functions.
- › How to handle missing values and clean the unclean data ?
- › Solve tricky problems on Wine dataset using pandas dataframes and pandas functions.

## 2. Scikit Learn

- › Understand different ML types and talk about Linear Regression & Classification use cases.
- › Types of Machine Learning Algo's. Solve a Single Variable Linear Regression problem.
- › Solve a Multivariable Linear Regression problem.

3. **Live Session:** Doubt clearing session the learnings from the self paced videos.

## 4. Python Libraries Assessment

### Week 4 :

1. Case Study on IPL Data analysis

2. Case Study based Assessment

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Scan this QR code with your smartphone and discover more information about the program

**FOR ENQUIRIES:**

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