



🕒 11 weeks  
Part Time

# Data Analytics with Python

**Contact:**  
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## Program Coverage – Learning Sprints

The Program focuses on competency development. Each course has a collection of "learning sprints." Each sprint typically requires a 10 hours of learning effort. Each learning sprint is mapped to a distinct task and is built around a challenge that validates a learner's ability to perform that task effectively.

Participants learn & apply increasingly difficult concepts to challenges. We believe skilling happens through this process of making mistakes, dealing with consequences, receiving feedback, and refactoring to improve. The course focuses on competency development.

The program consists of the following sprints that are described below.

8	<b>Perform CRUD Operations on a Data Frame</b>	<ul style="list-style-type: none"> <li>Read files to create data frames, index data frames, and append rows and columns. Search and replace elements and perform update and delete operations.</li> </ul>
9	<b>Query Data Frame Using Filters and Aggregations</b>	<ul style="list-style-type: none"> <li>Merge and group data frames. Find and drop duplicate rows, create a pivot table and cross table, and perform the missing value treatment.</li> </ul>
10	<b>Analyzing &amp; visualizing data using Python libraries</b>	<ul style="list-style-type: none"> <li>Analyse and visualize data using libraries available in Python</li> </ul>
11	<b>Case Study</b>	<ul style="list-style-type: none"> <li>Apply the knowledge and skills you have gained so far to solve a case study.</li> </ul>

### About NIIT StackRoute™

NIIT Limited is an Indian multinational skills and talent development corporation headquartered in Gurgaon, India. The company was set up in 1981 to help the nascent IT industry overcome its human resource challenges. Established in August 2015, StackRoute® is an NIIT-incubated venture. StackRoute runs immersive bootcamp programs that deliver job-ready professionals with deep skills. Our distinctive implementation of mastery learning combined with personalized tutoring allows us to guarantee learning outcomes. Our graduates confidently take on challenging assignments in the context of digital transformation. Several large global IT organizations, Global Incubation Centers, Product Engineering teams, and Universities trust StackRoute programs to transform their own employees' or students' digital skills. As a digital talent transformation partner, StackRoute programs transform over 20,000 professionals in India each year. In the USA, StackRoute Learning Inc., an NIIT company, partners with educational institutions across North America to offer University-branded online bootcamp programs to students who wish to upskill or reskill for better employment. In its 21 years in China, NIIT China has worked with over 100 Chinese universities.

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Sprint No.	Sprint Name	Sprint Objectives
1	<b>Getting Started With Python</b>	<ul style="list-style-type: none"> <li>Write simple programs such as adding two numbers, appending two words, and performing basic math operations using Python as a programming language</li> </ul>
2	<b>Decision Making With Conditional Statements</b>	<ul style="list-style-type: none"> <li>Write programs that make decisions using conditional statements in Python.</li> </ul>
3	<b>Iterative Statements and List Operations</b>	<ul style="list-style-type: none"> <li>Perform repetitive tasks, like printing a greeting message a certain number of times, using the concept of loops.</li> </ul>
4	<b>Looping Over Data Structures</b>	<ul style="list-style-type: none"> <li>Automate repetitive tasks using loops and data structures.</li> </ul>
5	<b>Writing Modular Programs in Python</b>	<ul style="list-style-type: none"> <li>Break complex task into smaller, reusable, and modular blocks of code.</li> </ul>
6	<b>Creating &amp; Manipulating NumPy Arrays</b>	<ul style="list-style-type: none"> <li>Use the NumPy library to create 1D and 2D arrays and perform array indexing. Manipulate data, apply arithmetic operations on arrays, execute matrix operations, and convert CSV file to an array.</li> </ul>
7	<b>Creating Data Frames using Series data type</b>	<ul style="list-style-type: none"> <li>Create, index, and manipulate a series of data structures and data frames using series.</li> </ul>

## Python for Data Analysis

Python has become a preferred programming language in the world of data analytics. Python provides libraries required to collate and analyze data from multiple sources.

Python programming and data analysis skills is a foundational skill in the data science domain. Data Analysis. It enables the pursuit of many different career paths that involves computer programming and data analysis. Overall, this program supports the Vision 2030 for KSA, which is focused on preparing young men and women for the jobs of the future.

## Program Outline & Highlights

This program helps learners build a strong foundation in programming that can help analyze data. You will write code using variables, data types, lists, loops, conditional logic, and functions.

The program covers Pandas and NumPy libraries that provide flexible and customizable commands to analyze data. Pandas provide tools for loading data from different file formats as Python objects. NumPy has extensive scientific and mathematical computing methods. Pandas and NumPy libraries help in reshaping, cleaning and optimizing data quickly and efficiently.

This program will help learners as they progress through their academic journey and will lay the foundation of an important programming and data analysis skill that will be of immense value in their professional lives.

## Program duration – 110 hours

This program is scheduled over **11 weeks** to make it convenient for students to take it up along with other academic work. In each week, learners need to spend **10 hours** of learning effort:

- To attend two sessions of two hours each
- Spend six hours to complete the hands-on assignments.
- Additionally, learners can use the Office Hours or two hours duration scheduled each week to clarify any doubts with the mentor.

## Exit Profile

Learners will acquire knowledge and skills to create simple programs using Python. This can be used to automate various tasks and analyze data.

On successful completion of all the challenges, each learner will be able to:

- Build basic programs using fundamental programming constructs to automate repetitive tasks
- Create modular programs
- Create NumPy Arrays



- Create Data Frames and perform CRUD operations
- Query Data Frames
- Analyze and visualize data

## Who Should Attend?

This program from NIIT StackRoute, brought to you by Prince Sultan University (PSU), is open to learners from all undergraduate disciplines who can:

- Communicate effectively in English
- Perform Basic Data Analysis using Excel
- Work comfortably on their PC with common productivity tools and use the Internet.

## Program Coverage – Learning Sprints

StackRoute courses emphasize self-learning facilitated by personalized coaching, mentoring, review, feedback & deliberate practice. The course is practice based i.e., learners learn by doing things rather than by watching videos or by attending traditional lectures.

