

IBM SKILLS ACADEMY



PYTHON TRAINING MODULE

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The Python Training module will make the reader accustomed to python language. This material will help the reader in understanding the basics of the python language, Python libraries and the use of python for the analytics.

VERSION

2019

LEARNING OBJECTIVES

- Explain what Python is
- Advantages and disadvantages of Python
- Getting started with Python and its different versions
- Explain variables, strings and functions
- Use of mathematical operators and functions
- Explain different statements like if, for etc.
- Explain the python libraries
- Explain Details of the Pandas library
 - Series and Data Frames
 - Grouping and aggregating
 - Merging and joining
- Define error handling in Python
- Define RE objects
- Define pattern matching and Parsing of data
- Define regression with Use case study
- Define exploratory data analysis
- Define correlation matrix
- Define visualization using matplotlib
- Define churn analysis with Use case
- Define advance Machine learning Algorithms
- Define Support vector machine
- Define Random forest

PREREQUISITES SKILLS

- Computer Science fundamentals
- Basic knowledge of applied math, algorithms, and data modelling
- Basic knowledge of statistics

DURATION

40 Hours

SKILL LEVEL

Basic – Intermediate

HARDWARE REQUIREMENTS

Processor	2 GHz or Higher
GB RAM	8 GB
GB Disk Free	80 GB
Network Requirements	Yes

Notes

The following unit and exercise durations are estimates and might not reflect every class experience. The estimates do not include the duration of optional exercises or sections. Students in this course use an IBM Cloud Lite account to perform the exercises. This account will never expire; therefore, students can continue working on the optional exercises after the class

COURSE AGENDA

UNIT I. Introduction to PYTHON

Duration: 6 Hrs.

Overview	This unit explains what is Python, its advantages and disadvantages, how to run python scripts, how to use variables, string operator and functions.
Learning Objectives	<p>After completing this unit, you should be able to:</p> <ul style="list-style-type: none"> • Explain what Python is • How to install and get start with python • How to use basic variables and stings in python • Work with Mathematical operators in python

UNIT II. Deep dive into PYTHON

Duration: 8 Hrs.

Overview	This unit consist more in depth working of Python like inputting the data, working with Boolean and other statements.
Learning Objectives	<p>After completing this unit, you should be able to:</p> <ul style="list-style-type: none"> • How to input data in Python • Use Boolean with python • Use If and elif statement in python • Use while loop in python • Work with lists • Use For statement

UNIT III. Python Libraries

Duration: 8 Hrs.

Overview	This unit explains the use of pandas library for data analysis
Learning Objectives	<p>After completing this unit, you should be able to:</p> <ul style="list-style-type: none"> • Install Pandas • Work with series and data frames • Work on grouping, aggregating and applying different functions on data • Merge and Join the data

UNIT IV. Error Handling

Duration: 4 hrs.

Overview	This unit explains how to deal with different type of errors that one can encounter while working with Python.
Learning Objectives	<p>After completing this unit, you should be able to:</p> <ul style="list-style-type: none"> • Deal with Syntax errors • Deal with the exceptions

UNIT V. Other Topics

Duration: 4 hrs.

Overview	This unit explains how to deal with miscellaneous things in python
Learning Objectives	<p>After completing this unit, you should be able to:</p> <ul style="list-style-type: none"> • Work with regular expression • Work with Pattern matching • Parse data

UNIT VI. Regression (Use case study)

Duration: 3 hrs.

Overview	This unit explains regression analysis with the help of a use case.
Learning Objectives	After completing this unit, you should be able to: <ul style="list-style-type: none"> • Define regression analysis • Work with regression analysis

UNIT VII. Other Regression related topics

Duration: 4 hrs.

Overview	This unit explains different topics which are important from the point of view of data analytics.
Learning Objectives	After completing this unit, you should be able to: <ul style="list-style-type: none"> • Define exploratory analysis • Define correlation matrix • Perform visualization using matplotlib • Implement linear regression

UNIT VIII. Advance

Duration: 3 hrs.

Overview	This unit explains some advance data analytics techniques.
Learning Objectives	After completing this unit, you should be able to: <ul style="list-style-type: none"> • Apply advanced Machine learning algorithms • Work on Support vector machines • Define Random forest