Week 1: Getting Started with Python (Total video duration= 3 hours. You will be required to spend 30 minutes/day along with practicing datasets and quizzes)

"Python is like a Swiss army knife for the coding world." It is a much-beloved programming language among data scientists and programmers alike. Python majorly has started being used in Data Science due to its simplicity and inherent readability. According to a study, almost 40% of the data scientists worldwide use Python for their day-to day work such as Weather Prediction, Fraud Detection, Airline Route Planning and much more.

Learning Outcomes from the Module:

After learning from this module, learners will be able to understand:

- Python as a language and it's working
- How to work with and manipulate strings; perform math operations; work with Python sequences; collect user input and output results; flow control processing
- Python packages and array selection, various selection techniques
- How to save and load files in Python
- The concept of Indexing, dealing with missing data and merging dataframes in Python

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Mentor Session Duration:	Faculty Name:	No. of videos:
2 hours	Mr. Gurumoorthy	16

Video No.	Video Name	Duration of the video	Topics Covered	Conceptual or Hands On
1	Introduction to Data Science	21:00	What is • Data Science?	Conceptual
2	What is Python language?	05:00	Introduction to Python • Difference between • R and Python	Conceptual + Hands On
3	Basic Installation of Python	08:00	Techniques by which • python can be installed	Conceptual + Hands On
4	Python Packages -Installation Overview	06:00	• Important keywords • Shortcuts Prerequisites to remember while working on Jupyter Notebook	Conceptual + Hands On
5	NumPy and its functions	19:00	• Concept of NumPy • How does it work?	Hands On
6	Python Arrays - Selection	10:00	• Different procedures to create the array	Hands On
7	Matrix Indexing	07:00	• What sets of vectors are 2D arrays or matrix?	Hands On
8	Selection Techniques	13:00	• Which selection techniques are used for comparison purposes?	Hands On

9	Saving and Loading files in Python	10:00	• Saving arrays in file using save and savez functions in Numpy library • Recap of how to create, generate,index arrays and performing universal operations and broadcasting operations	Hands On
10	NumPy vs Pandas	04:00	• Difference between NumPy package and Pandas package	Conceptual
11	Functionalities using pandas	06:00	• Creating a series and how is it different from a list • Performing custom indexing on series, list and dictionary	Conceptual
12	Pandas data frames and indexing	17:00	• Retrieving data from a dataset using loc and iloc functions and using different conditions	Conceptual + Hands On
13	Indexing in depth	04:00	• Custom indexing by resetting the values	Conceptual + Hands On
14	Dealing with missing data and group-by functions	11:00	• Dealing with missing data values and performing data operations like Mean, Standard deviation etc.	Conceptual + Hands On
15	Merging Dataframes in Python	14:00	• What is the difference between Merge and Join? • Concatenating rows by columns and columns by rows	Conceptual + Hands On
16	Pandas operations review	17:00	• Using different functions on multiple datasets to understand their application	Conceptual + Hands On

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Few textbooks that you can refer to:

1

Dr. R Nageswara Rao

Core Python Programming, Second Edition,
Dreamtech Press, 2019

2

Kenneth A. Lambert

The Fundamentals of Python:
First Programs, Cengage Learning, 2011

3

Allen B Downey

Think Python, O'Reilly, 2012