



Jansons Institute of Technology

Karumathampatti, Coimbatore – 641 659
Approved by AICTE and Affiliated to Anna University
An ISO 9001:2015 certified institution

Industry Readiness Course - Syllabus Department of Computer Science and Engineering

Python Programming for Data Science

2021- 2023 ODD Semester

Course Objectives:

- Explain Python Basics including Types, Expressions, and Variables.
- Describe Data Structures in Python including Lists, Tuples, Dictionaries, Sets.
- Apply Python programming using Branching, Loops, Functions, Objects & Classes.
- Work with data in Python using Pandas and Numpy libraries.

Expected Learning Outcomes

- Know basic data types in Python.
- Know operators, how to clean and merge datasets.
- Know pandas library, the main methods for DataFrames.
- Know how to import data in Python.
- Know how to work in Jupyter Notebook

Syllabus:

Module 1:

Basics of Python Spyder

Introduction to IDEs ,Spyder IDE, Benefits , Components and Features of Spyder- User Interface Walkthrough of Spyder, Setting working Directory - Creating and saving a script file - File execution - Commenting script files - Variable creation - Arithmetic and logical operators - Data types and associated operations.

Module 2:

Sequence Data Types and Associated Operations

Strings - Lists - Arrays - Tuples - Dictionary - Sets - Range - NumPy - ndarray - Indexing and Slicing - Operations on Arrays - Concatenating Arrays - Reshaping Arrays - Splitting Arrays - Statistical Operations on Arrays - Loading Arrays from Files

Module 3:

Pandas Dataframe and Dataframe Related Operations

Reading files - Exploratory data analysis - Data preparation and preprocessing - Data visualization - Scatter plot - Line plot - Bar plot - Histogram - Box plot - Pair plot - CASE STUDY on Regression- Classification.

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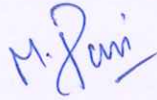
Books and references

1. Introduction to linear algebra - by Gilbert Strang
2. Applied statistics and probability for engineers – by Douglas Montgomery
3. Mastering python for data science, Samir Madhavan

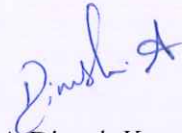
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