NOVUM LABS  
DATA SCIENCE AND ARTIFICIAL INELLIGENCE

Week-1  
FUNDAMENTALS-(PYTHON basics)(12hrs/6days)

* Types of Data Types-Integers,Float,Complex,Boolean,String
* Operators :Arithmetic,Relational,Logical,Assignment,Bitwise operators
* Input, Output, and Import modules
* Global, Local, and Non-local Variables
* Python Flow Control Statements
* if Statement,if-else Statement,if-elif-else Statement,Nested if Statement
* for Loop,while Loop,break, continue & pass Statements
* Date and Time
* DATA STRUCTURES-List,tuple,set,dictionary,strings

NUMPY (5hrs)

* Introduction to NumPy,history
* Understanding ndarrays,Creating NumPy arrays
* Array functions,Array Attributes
* Methods(reshaping,re-sizing, transposing)
* Random number generation with NumPy

Pandas(5hrs)

* Introduction to Pandas,History
* Creating Series and DataFrames
* Essential operations on Series and DataFrames
* Data Structures in Pandas
* Understanding the various data structures in Pandas
* Working with Series, DataFrame, and Index objects
* Data Manipulation in different formats (CSV, Excel, SQL)
* Data cleaning and handling missing values
* Data transformation and manipulation techniques(Indexing and Selection)
* Basics of indexing and selecting data in Pandas
* Advanced indexing techniques
* Boolean indexing
* Grouping and Aggregation
* Grouping data with Pandas
* Aggregating data using different functions
* Transformations and filtering within groups
* Merging and Joining DataFrames
* Combining DataFrames using merge and
* join operations
* Concatenating DataFrames
* Time Series Analysis with Pandas
* Handling time and date data
* Resampling and frequency conversion
* Time shifting and lagging
* Data Visualization with Pandas:
* Plotting with Pandas
* Exploratory data analysis using visualizations
* Advanced Topics in Pandas:
* Handling categorical data

Doubt session(1hr)

Problems solving (1 hr)