Master's in
Python & Data Science
with IIT Certification

Python

Week - 1

- Why Python
- Python IDE
- Hello World Program
- Numbers and Math Functions
- Common Errors in Python
- Variables & Names
- String Basics
- List
- Tuple
- Dictionaries
- Conditional Statements
- For and While Loop
- Functions

Week - 2

- Functions as Arguments
- List Comprehension
- File Handling
- Debugging in Python
- Class and Objects
- Lambda, Filters and Map
- Python PIP
- Read Excel Data in Python
- Python MySQL
- Iterators
- Pickling
- Python JSON

Computational Thinking - Basic

- Programming - Where to start
- What is Algorithmic Thinking
- Sample exercise problems & Deriving Solutions
- Bitwise & Boolean Algebra
- Memory Management/Technologies
- Stack and Heap
- Compiler vs Interpreter
- Best Practices – Keeping it simple, DRY code, naming Conventions, Comments and docs.
- Assessment

Computational Thinking - Advance

- Operators, Variables & Datatypes
- Loops and Conditions
- Nested Loop
- Strings
- Euclid's Algorithm
- What is Algorithm efficiency
- Arrays, Recursion
- What is Time Complexity in Programs
- Hands on Lab session
- Assessment

Data science

Week - 5

- Numerical Python Library (NumPy)
- High Dimensional Array & Creating NumPy Array
- Indexing
- Indexing
- Numpy Operations
- Problem Solution
- Broadcasting
- File handling
- Stats with NumPy
- Manipulating Text with Regular Expression

Week - 6

- Introduction to Pandas
- The Series Data Structure
- Querying a Series
- DataFrame Data Structure
- DataFrame Indexing and Loading
- Querying a DataFrame
- Indexing Dataframes
- Missing Values
- Example: Manipulating DataFrame

Week - 7

- Merging Dataframes
- Pandas Idioms
- Group by
- Scales

- Pivot Table
- Date/Time Functionality

- Data Visualisation
- Read Complex JSON files
- Styling Tabulation
- Distribution of Data - Histogram
- Box Plot
- Data Visualization - Recap
- Pie Chart
- Donut Chart
- Stacked Bar Plot
- Relative Stacked Bar Plot
- Stacked Area Plot
- Scatter Plots
- Bar Plot
- Continuous vs Continuous Plot
- Line Plot
- Line Plot Covid Data

MongoDB

- No Schema
- Install MongoDB
- How MongoDb Works?
- Insert First Data
- CRUD Operations
- Insert Many
- Update and Update Many
- Delete and Delete Many

- Diving Deep into find Difference between update and updateMany
- Projection
- Intro to Embed Documents
- Embed Documents in Action
- Adding Arrays
- Fetching Data From Structured Data
- Schema Types
- Types of Data in MongoDB
- Relationship between data's
- One to One using Embed Method
- One to One using ReferenceMany
- One to Many Embed
- One to ManyReferenceMethod