

Data Science Curriculum

Course Objectives:

- Gain a solid understanding of Python programming fundamentals.
- Learn how to use Python libraries for data manipulation, analysis, and visualization.
- Apply Python programming skills to analyze and visualize real-world datasets.
- Develop foundational knowledge for further study in data science and analytics.

Week 1: Introduction to Python

- Introduction to Python: History, features, and applications
- Installing Python and setting up the development environment (IDEs, Jupyter Notebook)
- Python syntax: Variables, data types, basic operators, and expressions

Week 2: Control Structures and Functions

- Control structures: If statements, loops (for and while), and conditional expressions
- Functions: Defining functions, parameters, return values, and function scope
- Built-in functions and libraries: Introduction to built-in functions and Python standard library

Week 3: Data Structures in Python

- Lists: Creating lists, indexing, slicing, and list methods
- Tuples: Creating tuples, accessing elements, and tuple methods
- Dictionaries: Creating dictionaries, accessing and modifying elements, dictionary methods

Week 4: Working with Files and Modules

Assessment:

- Weekly assignments or quizzes
- Final project presentation and report

References:

- "Python Crash Course" by Eric Matthes
- "Python for Data Analysis" by Wes McKinney
- Online tutorials and documentation for relevant libraries (Pandas, Matplotlib, Seaborn)