

Advanced Python Programming Syllabus

Object Oriented Python – a recap

4 Hours - 4 Topics

- **Assertion (Day 1)**
- **Decorators (Day 1)**
- **Generators (Day 2)**
- **Iterators (Day 2)**

Threading in Python

6 Hours - 1 Topic

- **Creation, Execution of threads using threading module (Day 3, 4 & 5)**

Database programming using Python

6 Hours - 2 Topics

- **Connecting to a database (sqlite) using Python (Day 6)**
- **Sending DML and DDL queries and processing the result from a Python Program (Day 7 & 8)**

Network programming using Python

6 Hours - 4 Topics

- **An introduction to client-server programming (Day 9)**
- **Basics of TCP and UDP protocols (Day 10)**
- **Introduction to socket programming (Day 11)**
- **Building an HTTP client and server (Day 11)**

GUI in Python

6 Hours - 2 Topics

- **Introduction to GUI building libraries (Day 12)**
- **Widgets (Day 13 & 14)**
 - **Button**
 - **Canvas**
 - **Checkbutton**
 - **Entry**
 - **Frame**
 - **Label**
 - **Listbox**
 - **Menubutton**
 - **Menu**
 - **Message**
 - **Radiobutton**
 - **Scale**
 - **Scrollbar**
 - **Text**
 - **Toplevel**
 - **Spinbox**
 - **PanedWindow**
 - **LabelFrame**

- **tkMessageBox**

Basic image processing using Python

6 Hours - 2 Topics

- **Introduction to digital image processing (Day 15)**
- **Basic operations on an image (Day 16 & 17)**
 - **Crop**
 - **Scale**
 - **Rotate**
 - **Flip**
 - **Changing contrast, brightness and color**
 - **Edge detection, blur, sharpening**

Basic numerical processing using Python

6 Hours - 3 Topics

- **Introduction to numpy (Day 18)**
- **Creation of vectors and matrices (Day 19)**
- **Matrix manipulation (Day 20)**

Basing data analysis using Python

6 Hours - 3 Topics

- **Introduction to Pandas (Day 21)**
- **Pandas data structures – Series and DataFrame (Day 22)**
- **Data wrangling using pandas (Day 23)**
 - **Loading a dataset into a dataframe**
 - **Selecting Columns from a dataframe**
 - **Selecting Rows from a dataframe**
 - **Adding new data in a dataframe**
 - **Deleting data from a dataframe**

Basic data visualization using Python

4 Hours - 6 Topics

- **Introduction to Matplotlib (Day 24)**
- **Scatter plot (Day 24)**
- **Line plot (Day 24)**
- **Bar chart (Day 25)**
- **Histogram (Day 25)**
- **Box plot (Day 25)**

Regular expression

6 Hours - 1 Topic

- **RE package (Day 26, 27 & 28)**

Web Scrapping

4 Hours - 1 Topic

- **Beautiful Soup (Day 29 & 30)**