

# Core Python Programming Syllabus

<b>Module 1</b>	<b>2 Hours - 2 Topics</b>
<ul style="list-style-type: none"><li>• <b>Introducing Python (Day 1)</b></li><li>• <b>Installing Python on Windows (Day 1)</b></li></ul>	
<b>Module 2</b>	<b>2 Hours - 1 Topic</b>
<ul style="list-style-type: none"><li>• <b>Installing Python on Linux and other Operating Systems (Day 2)</b></li></ul>	
<b>Module 3</b>	<b>2 Hours - 2 Topics</b>
<ul style="list-style-type: none"><li>• <b>Using quotes and escape character (Day 3)</b></li><li>• <b>String Concatenation and Repeater Operators (Day 3)</b></li></ul>	
<b>Module 4</b>	<b>2 Hours - 1 Topic</b>
<ul style="list-style-type: none"><li>• <b>Using Mathematical Operators with Numbers (Day 4)</b></li></ul>	
<b>Module 5</b>	<b>2 Hours - 3 Topics</b>
<ul style="list-style-type: none"><li>• <b>Creating and Using Lists (Day 5)</b></li><li>• <b>len() with Lists (Day 5)</b></li><li>• <b>in Operator with Lists (Day 5)</b></li></ul>	
<b>Module 6</b>	<b>2 Hours - 2 Topics</b>
<ul style="list-style-type: none"><li>• <b>Deleting List Element (Day 6)</b></li><li>• <b>Common list and operations (Day 6)</b></li></ul>	
<b>Module 7</b>	<b>2 Hours - 2 Topics</b>
<ul style="list-style-type: none"><li>• <b>Using Dictionaries (Day 7)</b></li><li>• <b>Accessing Dictionary values (Day 7)</b></li></ul>	
<b>Module 8</b>	<b>2 Hours - 2 Topics</b>
<ul style="list-style-type: none"><li>• <b>Adding, Replacing and Deleting key-value pairs (Day 8)</b></li><li>• <b>Functions: get(), keys(), values() and items() (Day 8)</b></li></ul>	
<b>Module 9</b>	<b>2 Hours - 1 Topic</b>
<ul style="list-style-type: none"><li>• <b>Using for Loops (Day 9)</b></li></ul>	
<b>Module 10</b>	<b>2 Hours - 3 Topics</b>
<ul style="list-style-type: none"><li>• <b>Using Sequence Operators and Functions with Strings (Day 10)</b></li><li>• <b>Using the in Operator (Day 10)</b></li><li>• <b>Indexing and Slicing Strings (Day 10)</b></li></ul>	
<b>Module 11</b>	<b>2 Hours - 4 Topics</b>
<ul style="list-style-type: none"><li>• <b>Defining Functions (Day 11)</b></li></ul>	

- Using Parameters and Return Values (Day 11)
- Using Arguments and Defaults Parameters (Day 11)
- Using Global Variables and Constants (Day 11)

Module 12	2 Hours - 3 Topics
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- Introduction to Object-Oriented Python (Day 12)
- Creating Classes, Methods and Objects (Day 12)
- Using Constructor and Attributes (Day 12)

Module 13	2 Hours - 3 Topics
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- Using Class Attributes and Static Methods (Day 13)
- Understanding Object Encapsulation (Day 13)
- Private Attributes and Methods (Day 13)

Module 14	2 Hours - 3 Topics
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- Controlling Attribute Access (Day 14)
- Inheritance (Day 14)
- Polymorphism (Day 14)

Module 15	2 Hours - 4 Topics
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- The open Function (Day 15)
- Input from Text Files (Day 15)
- Output to Text Files (Day 15)
- Handling Exceptions (Day 15)

Module 16	2 Hours - 2 Topics
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- Using Modules in Programs (Day 16)
- Writing Modules (Day 16)

Module 17	2 Hours - 1 Topic
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- Importing Modules (Day 17)

Module 18	2 Hours - 1 Topic
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- Functions: Recurssive function (Day 18)

Module 19	2 Hours - 1 Topic
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- Lambda Function (filter(), map()) (Day 19)

Module 20	2 Hours - 1 Topic
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- EXAM (Day 20)

# 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)**