Mastering Python

Course Content

Getting Started with Python
- Introduction Python
- Installing Python on Windows
- Installing Python on Linux and Other Operating Systems
- Introduction Python IDLE
- Programming in Interactive Mode
- Programming in Scripting Mode

Types, Variables and Input / Output
- Using quotes and escape character
- String Concatenation and Repeater Operators
- Using Mathematical Operators with Numbers
- Understanding Variables
- Getting User Input with input()
- Using Strings Methods
- Converting Values

Flow Control in Python
- The if Statement
- The else Clause
- Using elif Clause
- The while Statement
- Avoiding infinite loops
- Values as conditions
- Using Logical Operators
- Planning Your Program with Pseudocode

For & while Loops
- How to use While
- How to use While..else
- Using For
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Lists in Python
- Creating and Using Lists
- Len() with Lists
- In Operator with Lists
- Indexing, Slicing and Concatenating
- Deleting List Element with del

- Using Lists Methods such as append(), sort(), reverse(), count(), pop(), remove(), insert() and index()
- Using Nested Sequences
- Understanding Shared References

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- Using Tuples
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Dictionaries
- Using Dictionaries
- Accessing Dictionary values
- Adding, Replacing and Deleting key-value pairs
- Functions: get(), keys(), values() and items()

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- Using Parameters and Return Values
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- Using Global Variables and Constants
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- Using Modules in Programs
- Writing Modules
- Importing Modules
- Using Imported Functions and Modules

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- The os module
- Environment variables
- Launching external commands
- Walking directory trees
- Paths, directories, and filenames
- Working with file systems
- Dates and times

File Input and Output and Exception
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- Input from Text Files
- Storing Complex Data in Files with Pickles and Shelve
- Handling Exceptions
- Using try Statement with except Clause
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- Introducing ElementTree and xml
- Parsing XML
- Navigating the document
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- Parsing JSON into Python
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Object Oriented Python
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- Creating Classes,   Methods and Objects
- Using Constructor and Attributes
- Using Class Attributes and Static Methods
- Understanding Encapsulation
- Private Attribute Access
- Using Inheritance to Create New Classes
- Altering Behaviour of Inherited Methods
- Understanding Polymorphism

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- globals() and locals()
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- Available Interfaces
- Connecting to a server
- Creating and executing a cursor
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- Forking servers
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Multiprogramming
- When to use threads?
- The Global Interpreter Lock
- The threading module
- Simple threading
- Sharing variables
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- Debugging threaded programs
- Multiprocessing
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Graphical Application Development
- Examining A GUI
- Understanding Event Driven Programming
- Introduction to Tkinter Module
- Using Root Window
- Creating Frames
- Using Labels and Buttons
- GUI Programs with Classes
- Binding Widgets and Event Handlers
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Django Web Framework
- Features of Django
- Installation of Django
- MVC model
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Templates and Form
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- Load Template Files
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- Use Model Fields
- Populate a Database, CURD
- Use QuerySets

Data Science for AI and Machine Learning Using Python
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- Supervised Machine Learning – Regression
- Machine Learning – Classification
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Python for Data Analysis – NumPy
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- NumPy Array
- NumPy Array Indexing
- NumPy Operations

Python for Data Analysis – Pandas
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- Series
- DataFrames
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Python for Data Visualization – Matplotlib
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- Matplotlib
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