

Python Complete Course Outline (35 Lectures × 45 min)

Python Basics (Lectures 1-4)

- Lecture 1: Python Introduction, Installation, IDEs, Python 3 features
- Lecture 2: Syntax, Comments, Variables, Data Types
- Lecture 3: Operators, Expressions, Input/Output
- Lecture 4: Type Conversion, Numbers, Strings, String Methods

Control Flow (Lectures 5-6)

- Lecture 5: Conditional Statements (if, elif, else)
- Lecture 6: Loops (for, while), range(), break, continue, pass

Data Structures (Lectures 7-10)

- Lecture 7: Lists & List Methods
- Lecture 8: Tuples, Sets, Frozensets
- Lecture 9: Dictionaries, Methods, Dictionary Comprehensions
- Lecture 10: Arrays, Collections module

Functions & Modules (Lectures 11-13)

- Lecture 11: Defining Functions, Arguments, Return Values
- Lecture 12: Variable Scope, Lambda Functions, Decorators
- Lecture 13: Modules, Packages, Importing, pip, venv

File Handling & Exception Handling (Lectures 14-15)

- Lecture 14: File Read/Write (Text, CSV, JSON), Pickle
- Lecture 15: Exception Handling (try-except, else-finally, custom exceptions)

Object-Oriented Programming (Lectures 16-18)

- Lecture 16: Classes, Objects, Methods, init, self
- Lecture 17: Inheritance, Polymorphism, Encapsulation, Abstraction
- Lecture 18: Operator Overloading, Dunder Methods, Class & Static Methods

Standard Libraries & Advanced Python (Lectures 19-21)

- Lecture 19: datetime, math, random, os, sys, shutil, glob, pathlib
- Lecture 20: Regular Expressions, Logging, argparse, JSON/XML intro
- Lecture 21: Iterators, Generators, Context Managers, with statement

Data Handling & Visualization (Lectures 22-25)

- Lecture 22: Numpy – Arrays, Operations, Broadcasting
- Lecture 23: Pandas – Series, DataFrame, Data Cleaning, GroupBy
- Lecture 24: Data Visualization – matplotlib, seaborn basics
- Lecture 25: Reading Excel, Web Scraping (requests, BeautifulSoup)

Web & GUI Development (Lectures 26-28)

- Lecture 26: Flask Basics – Web Apps, Routing, Templates
- Lecture 27: Tkinter – Building Simple GUI Apps
- Lecture 28: Introduction to REST APIs in Python, FastAPI basics

Automation & Scripting (Lectures 29-30)

- Lecture 29: Automation Scripts (email, PDF, Excel automation)
- Lecture 30: Web Scraping Project & Data Automation Practice

Machine Learning & AI (Lectures 31-33)

- Lecture 31: Introduction to Scikit-learn, Machine Learning workflow
- Lecture 32: Regression, Classification demos with data
- Lecture 33: Brief on NLTK/Spacy, OpenCV basics, AI trends in Python

Industry Projects, Testing & Interview Prep (Lectures 34-35)

- Lecture 34: Project Work – Real-World Python Project (web, data, automation)
- Lecture 35: Unit Testing (unittest, pytest), Debugging, Portfolio & Interview Tips