

KAUR'S CODING ACADEMY

Python Programming

Module-wise Teacher Syllabus

A beginner-to-intermediate Python syllabus covering setup, variables, data types, strings, input, functions, conditions, loops, collections, OOP basics, decorators, generators and file handling.

Course	Audience	Suggested Duration	Final Output
Python Programming	Grades 7+, college students and programming beginners	4 modules / 8 to 10 weeks	Console-based Python application, logic challenges and file-handling mini project

Teacher Note

Focus on logic and clear output. Use small programs frequently and make students explain code line by line.

Learning Outcomes

- Set up Python and create first project in PyCharm or VS Code.
- Use variables, data types, operators, strings, input and type conversion.
- Write programs using conditions, loops, functions and collections.
- Understand basic classes, objects, decorators, generators, lambda, map and filter.
- Read, write and append files including text, CSV and JSON basics.

Document Use

This PDF is made for teachers to plan classes module by module. Each module includes topic names, teaching points, class practice and revision work.

Complete Module Index

The table below gives a quick view of what will be taught in this course.

Module	Topic Name	Main Things Teacher Will Cover
1	Python Setup and First Project	Python installation, PyCharm/VS Code setup, Creating first project, Running Python file, and more
2	Basic Data Types and Built-in Functions	Integers and floats, Strings and booleans, type function, Global built-in functions, and more
3	Comments and Math Operations	Single-line comments, Why comments are used, Arithmetic operations, Order of operations, and more
4	Programming Challenge - Grocery Store Purchase	Problem statement reading, Input values, Integer and float calculations, Subtotal and total, and more
5	Strings and String Functions	String creation, Indexing basics, Common string methods, Changing case, and more
6	Type Conversion and Input	input function, str, int and float conversion, Escape sequences, Asterisk triangle output, and more
7	Functions in Python	Function definition, Calling functions, Parameters and arguments, Return values, and more
8	Flow Control and Conditions	Comparison operators, if statement, else and elif, Nested if/else, and more
9	Loops - While and For	While loop, For loop, range function, Loop dry run, and more
10	Loop Challenges - Fizz Buzz and Factorial	Modulo operator use, Fizz Buzz logic, Factorial concept, Loop accumulation, and more
11	Strings, Slicing, Lists and Tuples	String methods recap, Reverse string challenge, Word counter, Slicing concept, and more
12	Classes and Objects	Introduction to classes and objects, Methods, __init__ constructor, __del__ concept, and more
13	Decorators	Function decorators concept, Why decorators are used, Simple custom decorator, In-built method decorators in class, and more
14	Generators, Lambda, Map and Filter	Generator concept, yield keyword, Lambda function, map function, and more
15	File Handling with Text, CSV and JSON	Opening files, Read, write and append modes, with statement, CSV basics, and more
16	Python Final Project and Tests	Revision of core topics, Mini project planning, Input-validation-output flow, Functions and file storage, and more

Detailed Module-wise Teaching Plan

Teachers should first explain the concept in simple language, then demonstrate code, then allow students to practice and customize the output.

Module 1: Python Setup and First Project

Topics to be Covered	What Teacher Will Explain / Demonstrate
- Python installation - PyCharm/VS Code setup - Creating first project - Running Python file - print function - Variables and assignments	- Show installation and interpreter selection - Explain how Python file runs - Demonstrate variables with simple values
Class Practice / Student Output	Homework / Revision
- Create first Python project - Print name and introduction - Create variables for age, city and hobby	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 2: Basic Data Types and Built-in Functions

Topics to be Covered	What Teacher Will Explain / Demonstrate
- Integers and floats - Strings and booleans - type function - Global built-in functions - Basic input/output idea	- Explain data types with everyday examples - Demonstrate type checking - Show simple built-in functions like len, max and min
Class Practice / Student Output	Homework / Revision
- Check types of different values - Use len on name string - Create small data display program	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 3: Comments and Math Operations

Topics to be Covered	What Teacher Will Explain / Demonstrate
- Single-line comments - Why comments are used - Arithmetic operations - Order of operations - More on float values - Rounding basics	- Demonstrate readable code with comments - Explain math operators with bill examples - Show float precision and rounding
Class Practice / Student Output	Homework / Revision
- Create marks total/average program - Create simple interest calculator - Add comments to explain code	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 4: Programming Challenge - Grocery Store Purchase

Topics to be Covered	What Teacher Will Explain / Demonstrate
- Problem statement reading - Input values - Integer and float calculations - Subtotal and total - Formatted output	- Teach how to break a problem into steps - Demonstrate variables for price and quantity - Show clean bill printing
Class Practice / Student Output	Homework / Revision
- Build grocery purchase calculator - Add multiple items - Print final bill clearly	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 5: Strings and String Functions

Topics to be Covered	What Teacher Will Explain / Demonstrate
- String creation - Indexing basics - Common string methods - Changing case - Finding and replacing text - String exercises	- Explain strings as text data - Demonstrate upper, lower, strip and replace - Show common mistakes with indexing
Class Practice / Student Output	Homework / Revision
- Create name formatting program - Clean messy input string - Solve string exercise set	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 6: Type Conversion and Input

Topics to be Covered	What Teacher Will Explain / Demonstrate
- input function - str, int and float conversion - Escape sequences - Asterisk triangle output - Celsius to Fahrenheit challenge	- Explain why input returns string - Demonstrate int/float conversion - Show print formatting and escape sequences
Class Practice / Student Output	Homework / Revision
- Build Celsius to Fahrenheit converter - Print triangle pattern - Create small question-answer program	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 7: Functions in Python

Topics to be Covered	What Teacher Will Explain / Demonstrate
- Function definition - Calling functions - Parameters and arguments - Return values - Reusable code - Small function challenges	- Explain functions as reusable instructions - Demonstrate calculator functions - Show return vs print difference
Class Practice / Student Output	Homework / Revision
- Write add/subtract functions - Create temperature conversion function - Use function in a mini project	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 8: Flow Control and Conditions

Topics to be Covered	What Teacher Will Explain / Demonstrate
- Comparison operators - if statement - else and elif - Nested if/else - Truthy and falsy values - Grade determiner challenge	- Explain decisions with marks and login examples - Demonstrate nested condition carefully - Show truthy/falsy examples
Class Practice / Student Output	Homework / Revision
- Build grade determiner - Create Roman numeral equivalent challenge - Solve condition quiz	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 9: Loops - While and For

Topics to be Covered	What Teacher Will Explain / Demonstrate
- While loop - For loop - range function - Loop dry run - Sum of numbers challenge - Finding characters in string	- Explain loops as repetition - Demonstrate dry running on board - Show for loop with range and strings
Class Practice / Student Output	Homework / Revision
- Calculate sum from 1 to n - Count characters in string - Practice loop exercises	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 10: Loop Challenges - Fizz Buzz and Factorial

Topics to be Covered	What Teacher Will Explain / Demonstrate
- Modulo operator use - Fizz Buzz logic - Factorial concept - Loop accumulation - Testing output cases	- Explain divisibility logic - Demonstrate step-by-step factorial calculation - Teach students to test with multiple inputs
Class Practice / Student Output	Homework / Revision
- Build Fizz Buzz program - Build factorial program - Explain code in class	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 11: Strings, Slicing, Lists and Tuples

Topics to be Covered	What Teacher Will Explain / Demonstrate
- String methods recap - Reverse string challenge - Word counter - Slicing concept - Lists - Tuples - List operations	- Explain sequences and indexes - Demonstrate slicing with examples - Show list vs tuple difference
Class Practice / Student Output	Homework / Revision
- Build word counter - Reverse a string - Create list of marks and calculate average	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 12: Classes and Objects

Topics to be Covered	What Teacher Will Explain / Demonstrate
- Introduction to classes and objects - Methods - <code>__init__</code> constructor - <code>__del__</code> concept - Special methods overview - Real-life object modeling	- Explain class as blueprint and object as instance - Demonstrate Student class - Show methods for behavior
Class Practice / Student Output	Homework / Revision
- Create Student class - Add method to display details - Create multiple objects	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 13: Decorators

Topics to be Covered	What Teacher Will Explain / Demonstrate
- Function decorators concept - Why decorators are used - Simple custom decorator - In-built method decorators in class - Practical use cases	- Explain wrapping a function with extra behavior - Demonstrate logging decorator - Show class method/static method idea
Class Practice / Student Output	Homework / Revision
- Create simple decorator - Apply decorator to function - Practice class method example	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 14: Generators, Lambda, Map and Filter

Topics to be Covered	What Teacher Will Explain / Demonstrate
- Generator concept - yield keyword - Lambda function - map function - filter function - Functional programming practice	- Explain memory-friendly data generation - Demonstrate lambda for small functions - Show map/filter with list of numbers
Class Practice / Student Output	Homework / Revision
- Create number generator - Use lambda for square - Filter even numbers from list	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 15: File Handling with Text, CSV and JSON

Topics to be Covered	What Teacher Will Explain / Demonstrate
- Opening files - Read, write and append modes - with statement - CSV basics - JSON basics - Saving project data	- Explain why programs need files - Demonstrate reading and writing text file - Show CSV/JSON as common data formats
Class Practice / Student Output	Homework / Revision
- Create contact list file - Save and read notes - Export simple data to CSV/JSON	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Module 16: Python Final Project and Tests

Topics to be Covered	What Teacher Will Explain / Demonstrate
- Revision of core topics - Mini project planning - Input-validation-output flow - Functions and file storage - Testing and code cleanup	- Guide students in choosing a simple project - Review logic and code readability - Ask viva-style questions from project
Class Practice / Student Output	Homework / Revision
- Build contact book, quiz, bill generator or word counter app - Submit code file - Present final project	- Revise the class notes and complete a small improvement in the class project. - Write down two doubts or two new things learned in the module.

Final Review and Certification Checklist

- Student can explain the main concepts in simple words.
- Student has completed the required practice tasks and mini projects.
- Student can run the project, fix common errors and present the work confidently.
- For advanced courses, student should submit GitHub repository, screenshots and deployment link where possible.