

# Python

Unit-wise syllabus and marks for the 2026-27 session.

|           |                |
|-----------|----------------|
| UNITS     | SESSION        |
| <b>12</b> | <b>2026-27</b> |

**Exam pattern.** Board-independent programming track, so there is no fixed external exam. Assessment is project- and practical-driven: roughly 60% hands-on coding assignments and projects, 40% concept checks/quizzes. For reference, in CBSE Computer Science (which uses Python) the board pattern is 70 marks theory + 30 marks practical.

**Practical.** Hands-on lab in every unit: learners code along in IDLE/VS Code and complete graded programming assignments. Culminates in multiple projects, console apps (calculator, quiz, game), a file-processing automation script, an OOP-based application, and a small data analysis project on a real CSV dataset using Pandas/Matplotlib. Mirrors CBSE-style practical work (program writing + project + viva).

| #        | UNIT AND TOPICS                                                                                                                                                                                                                                                              | MARKS |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>1</b> | <b>Getting Started with Python</b><br>Installing Python and using the interpreter / IDE (IDLE, VS Code); Interactive mode vs script mode; print() and basic output; Comments and code readability; Your first program                                                        | —     |
| <b>2</b> | <b>Variables, Data Types and Operators</b><br>Variables and assignment; Numbers (int, float, complex) and Booleans; Type casting and type checking; Arithmetic, comparison, logical, assignment operators; Identity and membership operators; Taking user input with input() | —     |
| <b>3</b> | <b>Strings</b><br>Creating and indexing strings; Slicing and immutability; String concatenation and repetition; Common string methods; String formatting (f-strings, format()); Escape sequences                                                                             | —     |
| <b>4</b> | <b>Control Flow</b><br>if / elif / else statements; Nested and shorthand conditionals; match-case statements; while loops; for loops and the range() function; break, continue and pass                                                                                      | —     |
| <b>5</b> | <b>Data Structures</b><br>Lists: indexing, slicing, methods, sorting; List comprehensions; Tuples and unpacking; Sets and set operations; Dictionaries and nested dictionaries; Looping techniques over collections                                                          | —     |

| #  | UNIT AND TOPICS                                                                                                                                                                                                                                                                                                                     | MARKS |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 6  | <b>Functions</b><br>Defining and calling functions; Parameters, arguments and return values; Default, keyword, *args and **kwargs; Scope: local vs global; Lambda (anonymous) functions; Recursion and an idea of efficiency; Modular thinking and reusability                                                                      | —     |
| 7  | <b>Modules and Standard Library</b><br>Importing modules and packages; math, random, statistics modules; datetime and time; Creating your own modules; pip and installing third-party packages; Brief tour of the standard library                                                                                                  | —     |
| 8  | <b>Input/Output and File Handling</b><br>Reading and writing text files; File modes (r, w, a, r+); with statement and context managers; Working with CSV files; Introduction to JSON                                                                                                                                                | —     |
| 9  | <b>Errors and Exception Handling</b><br>Syntax errors vs runtime errors; try / except / else / finally; Catching specific exceptions; Raising exceptions; Debugging strategies                                                                                                                                                      | —     |
| 10 | <b>Object-Oriented Programming</b><br>Classes and objects; The __init__ method and self; Instance attributes and methods; Encapsulation and private members; Inheritance and method overriding; Polymorphism; Special / dunder methods (__str__, __repr__)                                                                          | —     |
| 11 | <b>Working with Data (Intro Libraries)</b><br>Introduction to NumPy arrays; Introduction to Pandas DataFrames; Basic data analysis on CSV data; Simple plotting with Matplotlib; When and why to use libraries                                                                                                                      | —     |
| 12 | <b>Projects and Applications</b><br>Console mini-projects (calculator, quiz, number game); Text/file processing automation script; OOP-based application (e.g. bank/library/inventory manager); A small data-driven project using a CSV dataset; Code organisation, testing and documentation; Version basics and sharing your code | —     |

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