# I Want Basics of Python – Syllabus

Generated on: 2025-06-11 14:08:36

## I Want Basics of Python - 15-Week Syllabus  
  
\*\*Course Objectives:\*\* Understand Python Syntax & Structure, Write Python Programs, Use Data Types & Operators Effectively, Implement Control Structures, Modularize Code with Functions & Modules, Handle Errors & Exceptions, Apply Object-Oriented Programming (OOP), Work with Libraries & Packages, Manipulate Files & Data, Build Real-world Mini Projects.  
  
  
\*\*Week 1: Introduction to Python & Setup\*\*  
\* Main Topic: Setting up Python environment, first Python program.  
\* Subtopics: Installing Python, IDE choices (VS Code, PyCharm), Hello World program, basic print statements, comments.  
\* Activity: Simple Python script to display personal information.  
  
  
\*\*Week 2: Data Types & Operators\*\*  
\* Main Topic: Integers, Floats, Strings, Booleans.  
\* Subtopics: Variable assignment, arithmetic operators, string manipulation (concatenation, slicing), Boolean logic.  
\* Activity: In-class quiz on data types and operators.  
  
  
\*\*Week 3: More Data Types & Operators\*\*  
\* Main Topic: Lists, Tuples, Sets, Dictionaries.  
\* Subtopics: List manipulation (append, insert, remove), tuple immutability, set operations, dictionary access and manipulation.  
\* Activity: Lab exercise involving data type conversions and operations.  
  
  
\*\*Week 4: Control Flow - Conditional Statements\*\*  
\* Main Topic: `if`, `elif`, `else` statements.  
\* Subtopics: Boolean expressions, nested conditional statements, code indentation.  
\* Activity: Case study: Building a simple number guessing game.  
  
  
\*\*Week 5: Control Flow - Loops\*\*  
\* Main Topic: `for` and `while` loops.  
\* Subtopics: Iterating through lists, ranges, and dictionaries. Loop control statements (`break`, `continue`).  
\* Activity: Lab exercise involving loop manipulation and nested loops.  
  
  
\*\*Week 6: Functions\*\*  
\* Main Topic: Defining and calling functions.  
\* Subtopics: Function arguments, return values, scope, docstrings.  
\* Activity: Building a function to perform a specific calculation (e.g., calculate area of shapes).  
  
  
\*\*Week 7: Modules & Packages\*\*  
\* Main Topic: Using built-in modules (e.g., `math`, `random`).  
\* Subtopics: Importing modules, using functions from modules, installing external packages using pip.  
\* Activity: Lab exercise using the `math` module and an external package (e.g., `requests`).  
  
  
\*\*Week 8: Exception Handling\*\*  
\* Main Topic: `try`, `except`, `finally` blocks.  
\* Subtopics: Handling different types of exceptions, raising exceptions.  
\* Activity: Building a program that handles potential file errors.  
  
  
\*\*Week 9: Object-Oriented Programming (OOP) - Introduction\*\*  
\* Main Topic: Classes and Objects.  
\* Subtopics: Defining classes, creating objects, attributes, methods.  
\* Activity: Create a simple class representing a real-world object (e.g., a dog, a car).  
  
  
\*\*Week 10: OOP - Inheritance & Encapsulation\*\*  
\* Main Topic: Inheritance, Polymorphism, Encapsulation.  
\* Subtopics: Extending classes, method overriding, access modifiers.  
\* Activity: Lab exercise implementing inheritance and polymorphism.  
  
  
\*\*Week 11: File I/O\*\*  
\* Main Topic: Reading and writing files.  
\* Subtopics: Opening, closing, reading from, and writing to files. Working with different file modes.  
\* Activity: Build a program that reads data from a file and writes modified data to a new file.  
  
  
\*\*Week 12: Working with Data (CSV/JSON)\*\*  
\* Main Topic: Parsing CSV and JSON data.  
\* Subtopics: Using the `csv` and `json` modules. Data manipulation.  
\* Activity: Lab exercise involving parsing and manipulating data from a CSV or JSON file.  
  
  
\*\*Week 13: Mini-Project 1: Calculator or Quiz App\*\*  
\* Main Topic: Building a simple calculator or quiz application.  
\* Subtopics: User input, output, and program logic.  
\* Activity: Develop and present a functional calculator or quiz app.  
  
  
\*\*Week 14: Mini-Project 2: Data Parser\*\*  
\* Main Topic: Building a data parser for a specific data format (e.g., CSV, TXT).  
\* Subtopics: File handling, data cleaning, and data transformation.  
\* Activity: Develop and present a functional data parser.  
  
  
\*\*Week 15: Review & Final Project Presentation\*\*  
\* Main Topic: Review of key concepts and final project presentations.  
\* Subtopics: Q&A, feedback on projects.  
\* Activity: Final project presentations and overall course evaluation.

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