



# Python Beginner Course - Topics & Subtopics

## 1. Introduction to Python

1. What is Python?
  2. Features of Python
  3. Applications of Python
  4. Installing Python
  5. Running Python Programs
  6. Python IDEs (IDLE, VS Code, etc.)
  7. Python Syntax & Indentation
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## 2. Python Basics

1. Variables and Data Types
  2. Numbers (int, float, complex)
  3. Strings
  4. Booleans
  5. Type Casting
  6. Multiple Assignment
  7. Variable Scope (Local, Global)
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## 3. Strings

1. String Literals
2. Accessing Characters (Indexing)
3. Slicing Strings
4. String Methods (upper(), lower(), strip(), replace(), etc.)
5. f-Strings and Concatenation
6. String Formatting

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## **4. Numbers and Math**

1. Arithmetic Operators
2. Built-in Functions (abs(), pow(), round())

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## **5. User Input & Output**

1. input() Function
2. print() Formatting
3. Taking Multiple Inputs

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## **6. Python Operators**

1. Arithmetic Operators
2. Assignment Operators
3. Comparison Operators
4. Logical Operators
5. Identity Operators
6. Membership Operators
7. Bitwise Operators

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## **7. Control Flow**

1. if, elif, else
2. Nested Conditions
3. Logical Conditions

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## **8. Loops**

1. while Loop
2. for Loop
3. range() Function

4. break, continue, pass
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## **9. Data Structures**

### **a. Lists**

1. Creating Lists
2. Accessing, Slicing, Updating
3. List Methods (append(), insert(), remove(), pop(), etc.)
4. List Comprehension

### **b. Tuples**

1. Creating Tuples
2. Accessing and Unpacking
3. Tuple Methods

### **c. Sets**

1. Creating Sets
2. Set Methods (add(), update(), remove(), union(), intersection())

### **d. Dictionaries**

1. Creating Dictionaries
  2. Accessing and Modifying Values
  3. Dictionary Methods (keys(), values(), items())
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## **10. Functions**

1. Defining Functions
  2. Parameters & Arguments
  3. Return Statement
  4. Default & Keyword Arguments
  5. Variable-length Arguments (\*args, \*\*kwargs)
  6. Recursion
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## **11. Lambda Expressions**

1. Syntax and Usage
  2. map(), filter(), reduce()
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## **12. Python Modules**

1. Importing Modules
  2. Built-in Modules (random, datetime)
  3. Creating Custom Modules
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## **13. File Handling**

1. Opening and Reading Files
  2. Writing to Files
  3. File Modes (r, w, a, x)
  4. File Methods
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## **14. Error Handling**

1. Exceptions and Errors
  2. try, except
  3. finally, else
  4. Custom Exceptions
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## **15. Object-Oriented Programming (OOP)**

1. Classes and Objects
2. \_\_init\_\_ Constructor
3. self Keyword
4. Methods
5. Inheritance
6. Encapsulation & Polymorphism

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## **16. Python Date & Time**

1. datetime Module
2. date, time, timedelta
3. Formatting Dates

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## **17. GUI Programming with Tkinter**

1. What is Tkinter?
  2. Creating a Simple Window
  3. Labels, Buttons, and Entry Widgets
  4. Layout Managers (pack, grid)
  5. Handling Events
  6. Building a Simple App (e.g., admission form )
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