

Python is a popular programming language that system administrators, data scientists, and developers alike find indispensable for solving problems and implementing systems. This course is the first of four courses that will help you build a solid foundation in Python 3, an understanding of fundamental programming concepts, and the skills to develop simple algorithms. By the end of this course, you'll be able to:

- Use Python to solve problems
- Think computationally to frame accurate questions when solving problems
- Employ fundamental programming concepts such as data types, conditional statements, loops, and functions to solve problems efficiently
- Utilize Python to harness the power of external data sources like APIs and databases

We'll set the foundation for thinking like a programmer and efficiently solving real-world problems using Python by practicing on a variety of issues, starting with fundamental programming concepts. While this course is part of a series, each course is independent and self-contained. The courses can be completed in any order, depending on your goals and interests. Here is the roadmap of what this course will cover:

1. Setting the Stage - Explanation of course goals and expectations - Introduction to the Python programming language - Installation and setup of Python and its integrated development environment (IDE) - Introduction to the Jupyter Notebook, a tool for exploring and understanding programming concepts introduced in this course - Fundamentals of Problem Solving - Understanding the problem-solving process and its relationship to programming - Learning how the Python programming language can help solve problems - Common coding pitfalls and their consequences
2. Data Types and Structures - Introduction to data types in Python - Understanding how data types impact the efficiency of programming solutions - Practicing strategies and techniques for effectively using data types - Understanding how to create and manipulate lists, dictionaries, and sets - Correctly handling data input and output
3. Control Flow - Introducing conditional statements and their role in programming - Utilizing loops to solve problems repeatedly - Applying appropriate looping constructs to solve specific problems - Efficiently creating and working with functions - Utilizing functions to modularize code, making it more readable, reusable, and maintainable - Applying function arguments and return values effectively
4. Strategies and Tools for Efficient Problem-Solving - Introduction to algorithmic thinking and its impact on problem-solving - Utilizing resources to effectively solve problems and troubleshoot coding errors - Introduction to automating tasks and tools to streamline workflows

At the end of this course, you'll complete a final project to demonstrate the skills you have learned. You'll craft a robust program that leverages Python's capabilities to retrieve and parse data from an API and display the data within a graphical user interface (GUI). Throughout this course, you'll encounter numerous examples and exercises calling for the application of Python to solve relevant, real-world problems. You'll also be introduced to the diverse applications of Python across various fields and have the opportunity to explore unique applications through guided examples. This course is designed to help you gain a strong foundation in Python programming, setting you up for success in further exploring the multitude of opportunities available with this diverse and powerful programming language.