

# Python Functions Tutorial

This Python Functions Tutorial training covers how to write functions in Python, special blocks of code that only run at certain times throughout your program. You'll learn how to work with Python functions, from understanding parameters and arguments to writing code blocks that execute only when called.

[CBT Nuggets course material](#) →

## WEEK 1

### Understand Functions in Python

151 min.

Introduction to Functions	8
Exploring Built-In Functions	10
Creating Functions	16
Passing Arguments	11
The Return Statement	7

### Implement Functions in Python

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Args	10
Kwargs	6
Importing Modules	14
Returning Multiple Values	7
Scope	8

### Understand Functional Programming in Python

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Comprehensions	11
Lambda Functions	13
The Map Function	9
The Filter Function	6
The Reduce Function	5

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### Decorators & Generators

158 min.

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Decorator Syntax	6
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Generator Overview	2
Working with Generators	6
Generator Comprehensions	6

### First-Class Functions in Python

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Python Lambdas	12
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Example 2: Value or Iterable?	14
Example 3: Automatically Tracking Functions	9
Example 4: Checking Arguments	11

### Introduction to Partial Application and Currying

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What are Partial Application?	11
What is Currying?	9
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Partial Application with functools	12
Example 2: URL Builder	10

### Advanced Higher-Order Functions

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Argument Checking Review & Improvements	12
Argument Checking with Different Criteria	11
Argument Checking with a Single HOF	11
Adding Multiple Argument Checks	11
A Better Way to Add Multiple Argument Checks	6

### Advanced Partial Application & Currying

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Finding a Function's Expected Number of Arguments	5
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## Introduction to Memoization

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Why Do We Need Memoization?	12
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Memoizing the Fibonacci Sequence	14
Memoization with a Dictionary	6

## Composing Functions in Python

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Basics of Function Composition	11
Composing Python Functions	14
Composition Using Lists	8
Composition Using Higher-Order Functions	10
Composition Plus Partial Application	7

## Advanced Memoization

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Memoizing Multiple Arguments	10
Another Strategy for Memoizing Multiple Arguments	10
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## Introduction to Recursion in Python

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Basics of Recursion	12

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156 min.

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Looping Through a List with Recursion	12
Other Strategies for Dealing with Lists	10

## Recursion with Lists

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Recursive Max and Sum	7
Another Strategy for List Recursion	9
Re-Implementing Max and Sum	10
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## Working with Trees in Python

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Representing Trees Using Dictionaries	8
Representing Trees Using Combined Dictionaries and Lists	10

## Basic Tree Algorithms in Python

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Printing Trees Recursively	9
Recursive Printing with Different Tree Structures	14

## WEEK 6

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**25 min.**

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Printing Trees Breadth-First	8
A Better Way to Print Trees	7