In this Course Collection, learners will learn how to program or advance their programming skills in the Python programming language.

**Who this is for**

Developers looking to transition into the Python programming language or non-developers who want to use Python in their job functions.

**COURSES INCLUDE:**

- Programming for Everybody (Python)
- Python Data Structures
- Using Python to Access Web Data
- Using Databases with Python
- An Introduction to Interactive Programming in Python (Part 1)
- An Introduction to Interactive Programming in Python (Part 2)
- Principles of Computing
- Learn to Program: Crafting Quality Code
- Python Programming: A Concise Introduction
- Learn to Program: The Fundamentals
SKILLS ACQUIRED

- Python Programming
- Python Syntax And Semantics
- Computer Programming
- Programming Language
- Basic Programming

Programming for Everybody (Python)

DESCRIPTION

This course aims to teach everyone the basics of programming computers using Python. We cover the basics of how one constructs a program from a series of simple instructions in Python. The course has no pre-requisites and avoids all but the simplest mathematics. Anyone with moderate computer experience should be able to master the materials in this course.

TOPICS

★ Chapter One - Why we Program?
★ Installing and Using Python
★ Chapter One: Why We Program (continued)
★ Chapter Two: Variables and Expressions

PRACTICE

- 5 Quizzes
- 0 Peer-Reviewed Assignments
- 7 Programming Assignments

TIME

- ~15 hours total
- 2.2 hours per week

- ~6.2 hours of video
- ~8.8 assignment hours

SPECIALIZATION

Python for Everybody

RATING

4.8 out of 5 stars

TAUGHT BY

Charles Severance
Clinical Associate Professor, School of Information

Link to course
Python Data Structures

DESCRIPTION
This course will introduce the core data structures of the Python programming language. We will move past the basics of procedural programming and explore how we can use the Python built-in data structures such as lists, dictionaries, and tuples to perform increasingly complex data analysis.

SKILLS ACQUIRED
- Python Programming
- Data Structure
- Tuple
- Python Syntax And Semantics
- List & Label

TOPICS
- ★ Chapter Six: Strings
- ★ Unit: Installing and Using Python
- ★ Chapter Seven: Files
- ★ Chapter Eight: Lists

PRACTICE
- 5 Quizzes
- 0 Peer-Reviewed Assignments
- 7 Programming Assignments

TAUGHT BY
Charles Severance
Clinical Associate Professor, School of Information

SPECIALIZATION
Python for Everybody

RATING
4.8 out of 5 stars

TIME
- ~13.9 hours total
- ~6 hours of video
- ~7.9 assignment hours

Link to course
Peer-Reviewed Assignments
Programming Assignments
Using Python to Access Web Data

DESCRIPTION
This course will show how one can treat the Internet as a source of data. We will scrape, parse, and read web data as well as access data using web APIs. We will work with HTML, XML, and JSON data formats in Python. This course will cover Chapters 11-13 of the textbook “Python for Everybody”.

SKILLS ACQUIRED
- Python Programming
- Json
- Xml
- Web Scraping
- Web Api

TOPICS
★ Getting Started
★ Regular Expressions (Chapter 11)
★ Networks and Sockets (Chapter 12)
★ Programs that Surf the Web (Chapter 12)

PRACTICE
- 5 Quizzes
- 1 Peer-Reviewed Assignments
- 7 Programming Assignments

TIME
- ~16.9 hours total
- 2.8 hours per week
- ~5.5 hours of video
- ~11.4 assignment hours

SPECIALIZATION
- Python for Everybody

RATING
4.8 out of 5 stars ★★★★★

TAUGHT BY
Charles Severance
Clinical Associate Professor, School of Information
Skills Acquired
- Python Programming
- Database
- Sql
- Sqlite
- Database Model

Using Databases with Python

Description
This course will introduce students to the basics of the Structured Query Language (SQL) as well as basic database design for storing data as part of a multi-step data gathering, analysis, and processing effort. The course will use SQLite3 as its database. We will also build web crawlers and multi-step data gathering and visualization processes.

Topics
- Object Oriented Python
- Basic Structured Query Language
- Data Models and Relational SQL
- Many-to-Many Relationships in SQL

Practice
- 4 Quizzes
- 0 Peer-Reviewed Assignments
- 5 Programming Assignments

Specialization
Python for Everybody

Rating
4.8 out of 5 stars

Time
- ~12.6 hours total
- ~4.9 hours of video
- ~7.7 assignment hours

Taught by
Charles Severance
Clinical Associate Professor, School of Information
An Introduction to Interactive Programming in Python (Part 1)

DESCRIPTION

This two-part course is designed to help students with very little or no computing background learn the basics of building simple interactive applications. Our language of choice, Python, is an easy-to-learn, high-level computer language that is used in many of the computational courses offered on Coursera.

SKILLS ACQUIRED

- Python Programming
- Python Syntax And Semantics
- Computer Programming
- Programming Principles
- User Interface

TOPICS

- Statements, expressions, variables
- Functions, logic, conditionals
- Event-driven programming, local/global variables
- Canvas, drawing, timers

PRACTICE

- 8 Quizzes
- 4 Peer-Reviewed Assignments
- 0 Programming Assignments

SPECIALIZATION  
Fundamentals of Computing  
RATING 4.8 out of 5 stars  
TIME  
~25.1 hours total  5 hours per week  
~6.6 hours of video  
~16 assignment hours

TAUGHT BY

Joe Warren  
Professor

John Greiner  
Lecturer
An Introduction to Interactive Programming in Python (Part 2)

**DESCRIPTION**

This two-part course is designed to help students with very little or no computing background learn the basics of building simple interactive applications. Our language of choice, Python, is an easy-to-learn, high-level computer language that is used in many of the computational courses offered on Coursera.

**SKILLS ACQUIRED**

- Python Programming
- Object-Oriented Programming
- Python Syntax
- Logic Programming
- Computer Programming

**TOPICS**

- Week 5 - Mouse input, list methods, dictionaries
- Week 6 - Classes and object-oriented programming
- Week 7 - Basic game physics, sprites
- Week 8 - Sets and animation

**PRACTICE**

- 7 Quizzes
- 4 Peer-Reviewed Assignments
- 0 Programming Assignments

**TIME**

- ~21.6 hours total
- 5.4 hours per week
- ~5.9 hours of video
- ~14 assignment hours

**TAUGHT BY**

Joe Warren
Professor

John Greiner
Lecturer

**SPECIALIZATION**

Fundamentals of Computing

**RATING**

4.9 out of 5 stars

**Link to course**

[Peer-Reviewed Assignments](#)

[Programming Assignments](#)
SKILLS ACQUIRED

- Recursion
- Python Programming
- Tree (Data Structure)
- Algorithms
- Data Structure

PRINCIPLES OF COMPUTING

This course introduces the basic mathematical and programming principles that underlie much of Computer Science. Understanding these principles is crucial to the process of creating efficient and well-structured solutions for computational problems. To get hands-on experience working with these concepts, we will use the Python programming language.

TOPICS

★ Searching and Data Structures
★ Recursion
★ Trees
★ Modeling, Assertions, and Invariants

PRACTICE

- 4 Quizzes
- 0 Peer-Reviewed Assignments
- 4 Programming Assignments

DESCRIPTION

This course introduces the basic mathematical and programming principles that underlie much of Computer Science. Understanding these principles is crucial to the process of creating efficient and well-structured solutions for computational problems. To get hands-on experience working with these concepts, we will use the Python programming language.
Learn to Program: Crafting Quality Code

DESCRIPTION
Not all programs are created equal. In this course, we'll focus on writing quality code that runs correctly and efficiently. We'll design, code and validate our programs and learn how to compare programs that are addressing the same task.

SKILLS ACQUIRED
- Python Programming
- Unit Testing
- Software Testing
- Doctest
- Object-Oriented Programming

TOPICS
★ Week 1
★ Week 2
★ Week 3
★ Week 4

PRACTICE
- 4 Quizzes
- 1 Peer-Reviewed Assignments
- 1 Programming Assignments

RATING 4.5 out of 5 stars

TIME
~15.3 hours total
~2.9 hours per week
~9.7 assignment hours

TAUGHT BY
Jen Campbell
Department of Computer Science

Paul Gries
Associate Professor, Teaching Stream

Link to course
SKILLS ACQUIRED

- Python Programming
- Python Syntax And Semantics
- Computer Programming
- Python Libraries
- Ipython

Python Programming: A Concise Introduction

DESCRIPTION

The goal of the course is to introduce students to Python Version 3.x programming using hands-on instruction. It will show how to install Python and use the Spyder IDE (Integrated Development Environment) for writing and debugging programs. The approach will be to present an example followed by a small exercise where the learner tries something similar to solidify a concept.

TOPICS

- Beginning to Program in Python
- Working with Lists and Importing Libraries: The Random library
- Tuples, Data Dictionaries, Text and CSV Files
- Functional Values, Sorting, Formatting, Statistics, and a Menu Driven Database Program

PRACTICE

- 0 Quizzes
- 0 Peer-Reviewed Assignments
- 4 Programming Assignments

TIME

- ~10.9 hours total
- 2.7 hours per week
- ~4.3 hours of video
- ~4.3 assignment hours

RATING

4.6 out of 5 stars

TAUGHT BY

Bill Boyd
Quantitative Analysis Center

Link to course
Learn to Program: The Fundamentals

DESCRIPTION

Behind every mouse click and touch-screen tap, there is a computer program that makes things happen. This course introduces the fundamental building blocks of programming and teaches you how to write fun and useful programs using the Python language.

SKILLS ACQUIRED

- Python Programming
- Python Syntax And Semantics
- Computer Programming
- Idle (Python)
- Programming Language

TOPICS

★ Python, Variables, and Functions
★ Strings and Designing Functions
★ Booleans, Import, Namespaces, and if Statements
★ For Loops and Fancy String Manipulation

PRACTICE

- 8 Quizzes
- 0 Peer-Reviewed Assignments
- 3 Programming Assignments

TAUGHT BY

Jen Campbell
Department of Computer Science

Paul Gries
Associate Professor, Teaching Stream

RATING 4.7 out of 5 stars ★★★★★

TIME

~22.3 hours total
~4.9 hours per week
~15.9 assignment hours

Link to course