Networking Academy

Python Essentials 2

Course Overview

This course is designed for learners who are already familiar with the essentials of Python, universal computer programming concepts like data types, containers, functions, conditions and loops, and the basics of procedural, structural, and functional programming.

Benefits

Used by startups and tech giants like Google, Facebook, Netflix, and more, Python with user-friendly, easy-to-read code offers endless possibilities for creating small and large-scale software projects.

✓ Explore the world of programming

✓ Design, develop, and improve multi-module computer applications coded in Python

✓ Analyze and model real-life problems in Object-Oriented Programming categories

✓ Create and develop a programming portfolio

Course Details

Target Audience: Secondary and 2-Year college students, general audience

Estimated Time to Completion: 40 hours

Prerequisites: Python Essentials 1, PCEP certification, or equivalent

Course Delivery: Instructor-led or Self-paced

Learning Component Highlights:

- 4 modules and 21 practice labs
- Interactive activities & quizzes
- 1 final exam
- PCAP certification voucher discount

Course Recognitions: Digital badge

Certification Alignment: PCAP - Certified Associate in Python Programming certification

Recommended Next Course: DevNet Associate

Requirements

- ASC Alignment: Recommended
- Instructor Training: Optional
- Physical Equipment: Not required

Developed in collaboration with

Python Essentials 2

Scope and Sequence

Version 1.0

Developed in collaboration with
Python Institute Open Education and Development Group

Contents

Target Audience

This course is the second in a 2-course series that will prepare you for the PCAP – Certified Associate in Python Programming certification exam at Pearson VUE. The course picks up where Python Essentials 1 leaves off. The course is recommended for aspiring developers who are interested in pursuing careers connected with Software Development, Security, Networking, and the Internet of Things (IoT) as well as learners looking to gain more advanced skills in Python and computer programming:

- students at secondary schools, universities, vocational schools
- industry professionals who wish to explore technologies that relate to Python, or that utilize Python as a foundation for more complex projects
- team leaders, products managers, and project managers who want to understand the terminology and processes in the software development cycle to manage and communicate with IT, testing, and development teams more effectively
- simply anyone interested in learning programming for fun or job-related purposes.

Prerequisites

Python Essentials 1 course.

Certification Alignment

The Python Essentials 2 curriculum helps students prepare for [the PCAP - Certified Associate in Python Programming] certification exam. PCAP™ – Certified Associate in Python Programming certification (Exam PCAP-31-0x) is a professional, high-stakes credential that measures the candidate's ability to perform intermediate-level coding tasks in the Python language, including the ability to design, develop, debug, execute, and refactor multi-module Python programs, as well as measures their skills and knowledge related to analyzing and modeling real-life problems in OOP categories with the use of the fundamental notions and techniques available in the object-oriented approach.

Course Description

Its main goal is to teach you the skills related to the more advanced aspects of Python programming, including modules, packages, exceptions, file processing, as well as general coding techniques and object-oriented programming (OOP).
The course familiarizes the student with the procedural approach to programming and covers the following topic areas:

- Learn general coding techniques and best practices
- Learn to use object-oriented programming in Python
- Learn how to import and use Python modules
- Learn how to handle exceptions
- Learn how to process files

The course is broken down into 4 modules. Each student has access to hands-on practice materials, quizzes, and tests to learn how to utilize the skills and knowledge gained on the course and interact with some real-life programming tasks and situations.

Course Objectives

Upon completion of the course, students will be able to perform the following tasks:

- understand the role of the Python module and know the available ways of importing modules into her/his own code/namespace
- gain knowledge of selected useful standard Python modules
- have an orientation in package purposes as well as be able to create her/his own packages
- know the main function of PIP and be able to use it in order to install and uninstall ready-to-use packages f ram PyPl.
- know how characters are coded and stored inside the computer's memory, distinguish most known coding standards
- gain knowledge of Python's sequences and know the differences between strings and lists
- be able to effectively use selected Iists and string methods
- have an orientation of Python's way of identifying and handling runtime errors; Understand the purpose of the control statements try, except and raise; understand Python exception hierarchies.
- understand the fundamental concepts of object programming like class, object, property, method, inheritance, and polymorphism
- have an orientation in the differences between procedural and object approaches, as well as being oriented when both techniques reveal their pros and cons
- be able to build her/his own classes, objects, properties, and methods; be able to use inheritance and polymorphism in her/his inheritance path; understand the objective nature of Python exceptions. gain the ability to understand the concepts of generators, iterators and closures as well as be able to use them in adequate applications
- know how Python accesses physical file-system resources, understand file open modes, and perform basic input/output operations in relation to text and binary files
- gain an ability to manipulate date and time, work with a calendar, and create directory structures using Python
- be ready to take the Part 2 Summary Test, and the Final Test
- be prepared to attempt the qualification PCAP- Certified Associate in Python Programming from the OpenEDG Python Institute.

Equipment Requirements

The course can be accessed online through any Internet browser. The only pre-requisite is active online connection, a laptop/computer/tablet/mobile device, and an Internet browser. For the best learning experience, we recommend using the most recent versions of Mozilla Firefox, Internet Explorer/Microsoft Edge, or Google Chrome.

Course Outline

The table below details the course modules. Each module is an integrated unit of learning that consists of content, activities, and assessments that target a specific set of competencies. The size of the module depends on the depth of knowledge and skill needed to master the competency.

Module Title	**Description**
Module 1 Modules, Packages and PIP	• What is a module and why do we need it? • Importing and using modules • Review of some useful Python modules • What is a package and how does it differ from a module? • Constructing and using packages • PIP-the Swiss army knife for package maintenance.
Module 2 Characters, Strings, and Advanced Exceptions	• Characters, strings and coding standards • Strings vs. lists - similarities and differences • List methods • String methods • Python's way of handling runtime errors • Controlling the flow of errors using try and except Hierarchy of exceptions
Module 3 Object-Oriented Programming in Python	• Basic concepts of object programming • From procedural to object approach - motivations and profits • Classes, objects, properties, and methods • Inheritance and polymorphism Exception as an object.
Module 4 Working with Files and Utilities	• Generators, iterators, and closures • Working with filesystem, directory trees and files Selected Python Standard Library modules (os, date, datetime, calendar)