uCertify

Course Outline

Python Workshop



28 Mar 2024

1. Course Objective
2. Exercises, Quizzes, Flashcards & Glossary

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3. Expert Instructor-Led Training
4. ADA Compliant & JAWS Compatible Platform
5. State of the Art Educator Tools
6. Award Winning Learning Platform (LMS)
7. Chapter & Lessons

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   Chapter 1: Preface

   Chapter 2: Vital Python – Math, Strings, Conditionals, and Loops

   Chapter 3: Python Structures

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   Chapter 6: Constructing Python – Classes and Methods

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   Chapter 8: Becoming Pythonic

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   Chapter 10: Practical Python – Advanced Topics

   Chapter 11: Data Analytics with pandas and NumPy

   Chapter 12: Machine Learning

   Videos and How To
8. Live labs

   Lab Tasks

   Here's what you get

1. Course Objective

The Python Workshop course focuses on building up your practical skills so that you can build up your machine learning skills as a data scientist, write scripts that help automate your life and save you time, or even create your own games and desktop applications. You'll learn from real examples that lead to real results. It contains interactive lessons with knowledge checks and quizzes, videos covering detailed exercises, activities, and their guided solutions, and hands-on labs to build and iterate on your code like a software developer.

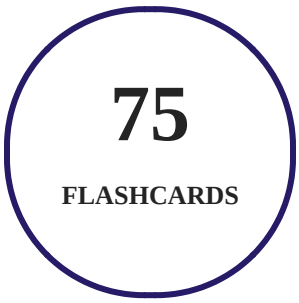
2. Quizzes

Quizzes test your knowledge on the topics of the exam when you go through the course material. There is no limit to the number of times you can attempt it.



3. flashcards

Flashcards are effective memory-aiding tools that help you learn complex topics easily. The flashcard will help you in memorizing definitions, terminologies, key concepts, and more. There is no limit to the number of times learners can attempt these. Flashcards help master the key concepts.



4. Glossary of terms

uCertify provides detailed explanations of concepts relevant to the course through Glossary. It contains a list of frequently used terminologies along with its detailed explanation. Glossary defines the key terms.



5. Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields. Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

6. ADA Compliant & JAWS Compatible Platform

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

7. State of the Art Educator Tools

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

8. Award Winning Learning Platform (LMS)

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**
    1. Best Postsecondary Learning Solution

- **2015**
    1. Best Education Solution
    2. Best Virtual Learning Solution
    3. Best Student Assessment Solution
    4. Best Postsecondary Learning Solution
    5. Best Career and Workforce Readiness Solution
    6. Best Instructional Solution in Other Curriculum Areas
    7. Best Corporate Learning/Workforce Development Solution

- **2016**
    1. Best Virtual Learning Solution
    2. Best Education Cloud-based Solution
    3. Best College and Career Readiness Solution
    4. Best Corporate / Workforce Learning Solution
    5. Best Postsecondary Learning Content Solution

6. Best Postsecondary LMS or Learning Platform
7. Best Learning Relationship Management Solution

- **2017**
  1. Best Overall Education Solution
  2. Best Student Assessment Solution
  3. Best Corporate/Workforce Learning Solution
  4. Best Higher Education LMS or Learning Platform

- **2018**
  1. Best Higher Education LMS or Learning Platform
  2. Best Instructional Solution in Other Curriculum Areas
  3. Best Learning Relationship Management Solution

- **2019**
  1. Best Virtual Learning Solution
  2. Best Content Authoring Development or Curation Solution
  3. Best Higher Education Learning Management Solution (LMS)

- **2020**
  1. Best College and Career Readiness Solution
  2. Best Cross-Curricular Solution
  3. Best Virtual Learning Solution

9.  Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

Syllabus

Chapter 1: Preface

- About the Course

Chapter 2: Vital Python – Math, Strings, Conditionals, and Loops

- Introduction
- Vital Python
- Numbers: Operations, Types, and Variables
- Python as a Calculator
- Strings: Concatenation, Methods, and input()
- String Interpolation
- String Indexing and Slicing
- Slicing
- Booleans and Conditionals
- Loops
- Summary

Chapter 3: Python Structures

- Introduction
- The Power of Lists
- Matrix Operations
- List Methods
- Dictionary Keys and Values
- Dictionary Methods
- Tuples
- A Survey of Sets
- Choosing Types
- Summary

Chapter 4: Executing Python – Programs, Algorithms, and Functions

- Introduction
- Python Scripts and Modules
- Python Algorithms
- Basic Functions
- Iterative Functions
- Recursive Functions

- Dynamic Programming
- Helper Functions
- Variable Scope
- Lambda Functions
- Summary

Chapter 5: Extending Python, Files, Errors, and Graphs

- Introduction
- Reading Files
- Writing Files
- Preparing for Debugging (Defensive Code)
- Plotting Techniques
- The Don'ts of Plotting Graphs
- Summary

Chapter 6: Constructing Python – Classes and Methods

- Introduction
- Classes and Objects

- Defining Classes
- The __init__ method
- Methods
- Properties
- Inheritance
- Summary

Chapter 7: The Standard Library

- Introduction
- The Importance of the Standard Library
- Dates and Times
- Interacting with the OS
- Using the subprocess Module
- Logging
- Collections
- Functools
- Summary

Chapter 8: Becoming Pythonic

- Introduction
- Using List Comprehensions
- Set and Dictionary Comprehensions
- Default Dictionary
- Iterators
- Itertools
- Generators
- Regular Expressions
- Summary

Chapter 9: Software Development

- Introduction
- Debugging
- Automated Testing
- Creating a PIP Package
- Creating Documentation the Easy Way
- Source Management
- Summary

Chapter 10: Practical Python – Advanced Topics

- Introduction
- Developing Collaboratively
- Dependency Management
- Deploying Code into Production
- Multiprocessing
- Parsing Command-Line Arguments in Scripts
- Performance and Profiling
- Profiling
- Summary

Chapter 11: Data Analytics with pandas and NumPy

- Introduction
- NumPy and Basic Stats
- Matrices
- The pandas Library
- Data

- Null Values
- Visual Analysis
- Summary

Chapter 12: Machine Learning

- Introduction
- Introduction to Linear Regression
- Cross-Validation
- Regularization: Ridge and Lasso
- K-Nearest Neighbors, Decision Trees, and Random Forests
- Classification Models
- Boosting Methods
- Summary

10. Live Labs

The benefits of live-labs are:

- Exam based practical tasks
- Real equipment, absolutely no simulations
- Access to the latest industry technologies

- Available anytime, anywhere on any device
- Break and Reset functionality
- No hardware costs

Lab Tasks

Vital Python – Math, Strings, Conditionals, and Loops

- Assigning Values to a Variable
- Determining the Pythagorean Distance Between Three Points
- Displaying Strings
- Using the input() Function
- Using the if-else Syntax
- Finding the LCM (Least Common Multiple)
- Using the for Loop

Python Structures

- Using a Nested List to Store Employee Data
- Implementing Matrix Operations
- Accessing an Item from a List
- Adding Items to a List
- Storing Company Employee Table Data Using a List and a Dictionary
- Implementing Set Operations

Executing Python – Programs, Algorithms, and Functions

- Writing and Executing a Script
- Finding the Maximum Number Using Pseudocode
- Using Bubble Sort in Python
- Implementing Linear Search in Python
- Implementing Binary Search in Python
- Checking Whether a Number is Prime

- Finding the Factorial of a Number Using Recursion

Extending Python, Files, Errors, and Graphs

- Reading a Text File Using Python
- Drawing a Scatter Plot to Study the Data
- Creating a Pie Chart
- Generating a Density Plot
- Visualizing the Titanic Dataset Using a Pie Chart and Bar Plot

Constructing Python – Classes and Methods

- Creating a Class
- Using the init Method
- Implementing Inheritance

The Standard Library

- Comparing datetime across Time Zones
- Calculating the Time Delta between Two datetime Objects

Becoming Pythonic

- Building a Scorecard Using Dictionary Comprehension and Multiple Lists
- Implementing the __iter__() Method
- Using Regular Expressions to Replace Text
- Using Regular Expressions to Find Winning Customers

Software Development

- Debugging Sample Python Code for an Application
- Checking Sample Code with Unit Testing

Practical Python – Advanced Topics

- Using the Multiprocessing Package
- Introducing argparse to Accept Input from the User

Data Analytics with pandas and NumPy

- Finding the Mean and Median from a Collection of Income Data
- Using DataFrames to Manipulate Data
- Reading and Viewing the Boston Housing Dataset
- Performing Visual Data Analysis

Machine Learning

- Using Linear Regression to Predict the Accuracy of the Median Values of a Dataset
- Using Machine Learning to Predict Customer Return Rate Accuracy

Here's what you get

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LIVE LABS	VIDEO TUTORIALS	HOURS

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