uCertify

Course Outline

Data Wrangling with Python



27 Mar 2024

1. Course Objective
2. Pre-Assessment
3. Exercises, Quizzes, Flashcards & Glossary

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4. Expert Instructor-Led Training
5. ADA Compliant & JAWS Compatible Platform
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   Chapter 4: Introduction to NumPy, Pandas, and Matplotlib

   Chapter 5: A Deep Dive into Data Wrangling with Python

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1. Course Objective

Use Data Wrangling with Python course and lab to gain an understanding of the concepts and methodologies associated with it. The data wrangling course and lab provide an understanding of the processes used along with the knowledge of the most popular tools and techniques in the domain. The Python course and lab also demonstrate how to use the Python back-end and extract/transform data from an array of sources including the Internet.

2. Pre-Assessment

Pre-Assessment lets you identify the areas for improvement before you start your prep. It determines what students know about a topic before it is taught and identifies areas for improvement with question assessment before beginning the course.

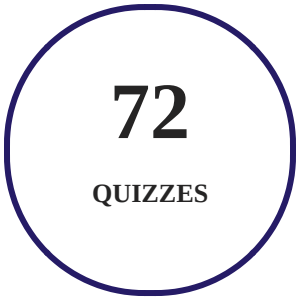
3. Exercises

There is no limit to the number of times learners can attempt these. Exercises come with detailed remediation, which ensures that learners are confident on the topic before proceeding.



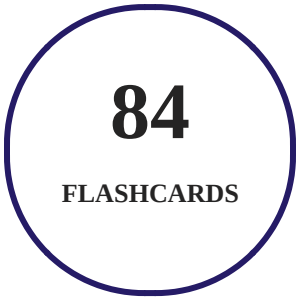
4. Quizzes

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.



5. 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.



6. 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.



7. 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.

8. 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.

9. 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.

10. 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

11. 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: Introduction

- About the Course
- Learning Objectives
- Approach

- Audience
- Minimum Hardware Requirements
- Software Requirements
- Conventions
- Installation and Setup

Chapter 2: Introduction to Data Wrangling with Python

- Introduction
- Python for Data Wrangling
- Lists, Sets, Strings, Tuples, and Dictionaries
- Summary

Chapter 3: Advanced Data Structures and File Handling

- Introduction
- Advanced Data Structures
- Basic File Operations in Python
- Summary

Chapter 4: Introduction to NumPy, Pandas, and Matplotlib

- Introduction
- NumPy Arrays
- Pandas DataFrames
- Statistics and Visualization with NumPy and Pandas
- Summary

Chapter 5: A Deep Dive into Data Wrangling with Python

- Introduction
- Subsetting, Filtering, and Grouping
- Detecting Outliers and Handling Missing Values
- Concatenating, Merging, and Joining
- Useful Methods of Pandas
- Summary

Chapter 6: Getting Comfortable with Different Kinds of Data Sources

- Introduction
- Reading Data from Different Text-Based (and Non-Text-Based) Sources
- Introduction to Beautiful Soup 4 and Web Page Parsing

- Summary

Chapter 7: Learning the Hidden Secrets of Data Wrangling

- Introduction
- Advanced List Comprehension and the zip Function
- Data Formatting
- Identify and Clean Outliers
- Summary

Chapter 8: Advanced Web Scraping and Data Gathering

- Introduction
- The Basics of Web Scraping and the Beautiful Soup Library
- Reading Data from XML
- Reading Data from an API
- Fundamentals of Regular Expressions (RegEx)
- Summary

Chapter 9: RDBMS and SQL

- Introduction

- Refresher of RDBMS and SQL
- Using an RDBMS (MySQL/PostgreSQL/SQLite)
- Reading Data from a Database in SQLite
- Summary

Chapter 10: Application of Data Wrangling in Real Life

- Introduction
- Applying Your Knowledge to a Real-life Data Wrangling Task
- An Extension to Data Wrangling
- Summary

Videos and How To

uCertify course includes videos to help understand concepts. It also includes How Tos that help learners in accomplishing certain tasks.

33	03:13
VIDEOS	HOURS

12. Practice Test

Here's what you get

47	53
PRE-ASSESSMENTS QUESTIONS	POST-ASSESSMENTS QUESTIONS

Features

Each question comes with detailed remediation explaining not only why an answer option is correct but also why it is incorrect.

Unlimited Practice

Each test can be taken unlimited number of times until the learner feels they are prepared. Learner can review the test and read detailed remediation. Detailed test history is also available.

Each test set comes with learn, test and review modes. In learn mode, learners will attempt a question and will get immediate feedback and complete remediation as they move on to the next question. In test mode, learners can take a timed test simulating the actual exam conditions. In review mode, learners can read through one item at a time without attempting it.

13. 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

Introduction to Data Wrangling with Python

- Sorting a List
- Generating a List
- Deleting a Value from a Dictionary
- Accessing and Setting Values in a Dictionary
- Slicing a String

Advanced Data Structures and File Handling

- Implementing a Queue
- Splitting a String
- Implementing Multi-Element Membership Checking
- Implementing a Stack
- Opening a File and Printing its Content

Introduction to NumPy, Pandas, and Matplotlib

- Generating Arrays Using arange and linspace
- Multiplying Two Arrays
- Adding Two NumPy Arrays
- Creating a NumPy Array
- Filtering Elements from a Matrix
- Stacking Arrays

A Deep Dive into Data Wrangling with Python

- Subsetting a DataFrame

- Grouping a DataFrame
- Dropping the Missing Values
- Replacing Missing Values in a DataFrame
- Joining DataFrames
- Concatenating Data Frames
- Counting Values

Getting Comfortable with Different Kinds of Data Sources

- Bypassing the Headers of a CSV File
- Reading Data from a CSV File
- Stacking URLs from a Document Using bs4
- Counting Tags

Learning the Hidden Secrets of Data Wrangling

- Using the zip Function
- Using a One-Liner Generator Expression
- Using a Generator Expression
- Using the format Function
- Using a Box Plot

Advanced Web Scraping and Data Gathering

- Checking the Status of the Web Request
- Extracting Text from a Section
- Traversing an XML Tree
- Checking Whether the Input String Begins with a Specific Word
- Matching Pattern
- Finding the Number of Words in a List That End with ing

RDBMS and SQL

- Deleting the Data
- Using Joins
- Using the Foreign Key

- Updating Data
- Using the ORDER BY Clause
- Using the SELECT Statement
- Using the SELECT Statement

Application of Data Wrangling in Real Life

- Skipping the First Row of the Data Set

Here's what you get

45	6	07
LIVE LABS	VIDEO TUTORIALS	MINUTES

14. Post-Assessment

After completion of the uCertify course Post-Assessments are given to students and often used in conjunction with a Pre-Assessment to measure their achievement and the effectiveness of the exam.

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