uCertify

Course Outline

Big Data Analysis with Python



28 Mar 2024

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

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

   Syllabus

   Chapter 1: Preface

   Chapter 2: The Python Data Science Stack

   Chapter 3: Statistical Visualizations

   Chapter 4: Working with Big Data Frameworks

   Chapter 5: Diving Deeper with Spark

   Chapter 6: Handling Missing Values and Correlation Analysis

   Chapter 7: Exploratory Data Analysis

   Chapter 8: Reproducibility in Big Data Analysis

   Chapter 9: Creating a Full Analysis Report

   Videos and How To
9. Practice Test

   Here's what you get

   Features
10. Live labs

    Lab Tasks

    Here's what you get
11. Post-Assessment

1. Course Objective

Get hands-on experience of big data analysis with Python with the comprehensive course and lab. The lab provides hands-on learning in analyzing data with the use of python, beginning up with the basics to mastering different types of data. The course and lab deal with python data science stack, statistical visualizations, working with big data frameworks, handling missing values and correlation analysis, exploratory data analysis, reproducibility in big data analysis, and many more.

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.



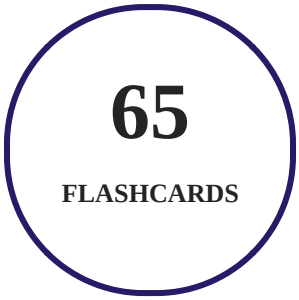
4. Quizzes

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: Preface

- About

Chapter 2: The Python Data Science Stack

- Introduction
- Python Libraries and Packages
- Using Pandas
- Data Type Conversion
- Aggregation and Grouping
- Exporting Data from Pandas
- Visualization with Pandas
- Summary

Chapter 3: Statistical Visualizations

- Introduction
- Types of Graphs and When to Use Them
- Components of a Graph
- Seaborn
- Which Tool Should Be Used?
- Types of Graphs
- Pandas DataFrames and Grouped Data
- Changing Plot Design: Modifying Graph Components

- Exporting Graphs
- Summary

Chapter 4: Working with Big Data Frameworks

- Introduction
- Hadoop
- Spark
- Writing Parquet Files
- Handling Unstructured Data
- Summary

Chapter 5: Diving Deeper with Spark

- Introduction
- Getting Started with Spark DataFrames
- Writing Output from Spark DataFrames
- Exploring Spark DataFrames
- Data Manipulation with Spark DataFrames
- Graphs in Spark
- Summary

Chapter 6: Handling Missing Values and Correlation Analysis

- Introduction
- Setting up the Jupyter Notebook
- Missing Values
- Handling Missing Values in Spark DataFrames
- Correlation
- Summary

Chapter 7: Exploratory Data Analysis

- Introduction
- Defining a Business Problem
- Translating a Business Problem into Measurable Metrics and Exploratory Data Analysis (EDA)
- Structured Approach to the Data Science Project Life Cycle
- Summary

Chapter 8: Reproducibility in Big Data Analysis

- Introduction

- Reproducibility with Jupyter Notebooks
- Gathering Data in a Reproducible Way
- Code Practices and Standards
- Avoiding Repetition
- Summary

Chapter 9: Creating a Full Analysis Report

- Introduction
- Reading Data in Spark from Different Data Sources
- SQL Operations on a Spark DataFrame
- Generating Statistical Measurements
- Summary

12. Practice Test

Here's what you get

30	30
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

The Python Data Science Stack

- Interacting with the Python Shell
- Calculating the Square
- Grouping a DataFrame
- Applying a Function to a Column
- Subsetting a DataFrame
- Slicing and Subsetting
- Reading Data from a CSV File
- Viewing the Standard Deviation
- Calculating the Median Value
- Calculating the Mean Value

Statistical Visualizations

- Plotting an Analytical Graph
- Creating a Graph
- Creating a Graph for a Mathematical Function
- Creating a Line Graph Using Seaborn
- Creating a Line Graph Using pandas
- Creating a Line Graph Using matplotlib
- Detecting Outliers
- Displaying Histograms
- Using a Box Plot
- Constructing a Scatterplot
- Plotting a Line Graph with Styles and Color
- Configuring a Title and Labels for Axis Objects
- Designing a Complete Plot
- Exporting a Graph to a File on a Disk

Working with Big Data Frameworks

- Performing DataFrame Operations in Spark
- Accessing Data with Spark
- Parsing Text in Spark

Diving Deeper with Spark

- Creating a DataFrame Using a CSV File
- Creating a DataFrame from an Existing RDD
- Specifying the Schema of a DataFrame
- Removing a Column from a DataFrame
- Renaming a Column in a DataFrame
- Adding a Column to a DataFrame
- Creating a KDE Plot
- Creating a Linear Model Plot
- Creating a Bar Chart

Handling Missing Values and Correlation Analysis

- Filtering Data
- Counting Missing Values
- Handling NaN Values
- Using the Backward and Forward Filling Methods
- Calculating Correlation Coefficient

Exploratory Data Analysis

- Generating the Feature Importance of the Target Variable
- Identifying the Target Variable
- Plotting a Heatmap
- Generating a Normal Distribution Plot

Reproducibility in Big Data Analysis

- Performing Data Reproducibility

- Preprocessing Missing Values with High Reproducibility
- Normalizating the Data

Here's what you get

48	12	20
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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