

**uCertify**

# Course Outline

**Data Science Foundation**



08 May 2024

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## 1. Course Objective

Unlock the power of data and pave your way to success with the Data Science Foundation course. Prepare for the exam while engaging in interactive lessons, quizzes, test preps, and hands-on labs that will equip you with the skills to analyze, manipulate, and present data effectively. Become a sought-after data science practitioner and bring invaluable insights to your organization's decision-making processes.

## 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.

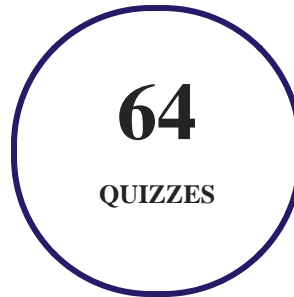
## 3. Exercises

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.

**154**  
EXERCISES

## 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.



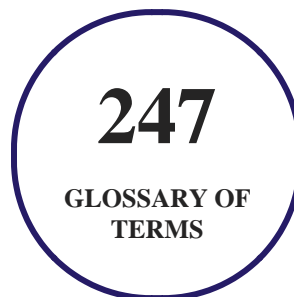
## 5. flashcards

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: About This Course

- Course Description
- Course Objectives

## Chapter 2: Addressing Business Issues with Data Science

- Topic A: Initiate a Data Science Project
- Topic B: Formulate a Data Science Problem
- Summary

## Chapter 3: Extracting, Transforming, and Loading Data

- Topic A: Extract Data
- Topic B: Transform Data
- Topic C: Load Data
- Summary

## Chapter 4: Analyzing Data

- Topic A: Examine Data
- Topic B: Explore the Underlying Distribution of Data
- Topic C: Use Visualizations to Analyze Data
- Topic D: Preprocess Data
- Summary

## Chapter 5: Designing a Machine Learning Approach

- Topic A: Identify Machine Learning Concepts
- Topic B: Test a Hypothesis
- Summary

## Chapter 6: Developing Classification Models

- Topic A: Train and Tune Classification Models
- Topic B: Evaluate Classification Models
- Summary

## Chapter 7: Developing Regression Models

- Topic A: Train and Tune Regression Models
- Topic B: Evaluate Regression Models
- Summary

## Chapter 8: Developing Clustering Models

- Topic A: Train and Tune Clustering Models
- Topic B: Evaluate Clustering Models
- Summary

## Chapter 9: Finalizing a Data Science Project

- Topic A: Communicate Results to Stakeholders
- Topic B: Demonstrate Models in a Web App
- Topic C: Implement and Test Production Pipelines
- Summary

## 12. Practice Test

### Here's what you get

**25**  
PRE-ASSESSMENTS  
QUESTIONS

**2**  
FULL LENGTH TESTS

**25**  
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

### **Extracting, Transforming, and Loading Data**

- Reading Data from a CSV File
- Extracting Data with Database Queries
- Consolidating Data from Multiple Sources
- Handling Irregular and Unusable Data
- Correcting Data Formats
- De-duplicating Data
- Handling Textual Data
- Loading Data into a Database
- Loading Data into a DataFrame
- Exporting Data to a CSV File

## **Analyzing Data**

- Examining Data
- Exploring the Underlying Distribution of Data
- Analyzing Data Using Histograms
- Analyzing Data Using Box Plots and Violin Plots
- Analyzing Data Using Scatter Plots and Line Plots
- Analyzing Data Using Bar Charts
- Analyzing Data Using HeatMaps
- Handling Missing Values
- Applying Transformation Functions to a Dataset
- Encoding Data
- Discretizing Variable
- Splitting and Removing Features
- Performing Dimensionality Reduction

## **Developing Classification Models**

- Training a Logistic Regression Model
- Training a k-NN Model
- Training an SVM Classification Model
- Training a Naïve Bayes Model
- Training Classification Decision Trees and Ensemble Models

## **Developing Regression Models**

- Training a Linear Regression Model
- Training Regression Trees and Ensemble Models
- Tuning Regression Models
- Evaluating Regression Models

## **Developing Clustering Models**

- Training a k-Means Clustering Model
- Training a Hierarchical Clustering Model

- Tuning Clustering Models
- Evaluating Clustering Models

#### Finalizing a Data Science Project

- Building an ML Pipeline

### Here's what you get

**37**

LIVE LABS

**37**

VIDEO TUTORIALS

**01:50**

HOURS

## 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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