

**uCertify**

# Course Outline

**R for Data Science**



29 Apr 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: Data Mining Patterns

Chapter 3: Data Mining Sequences

Chapter 4: Text Mining

Chapter 5: Data Analysis – Regression Analysis

Chapter 6: Data Analysis – Correlation

Chapter 7: Data Analysis – Clustering

Chapter 8: Data Visualization – R Graphics

Chapter 9: Data Visualization – Plotting

Chapter 10: Data Visualization – 3D

Chapter 11: Machine Learning in Action

Chapter 12: Predicting Events with Machine Learning

Chapter 13: Supervised and Unsupervised Learning

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 R for Data Science with the comprehensive course and lab. The lab provides hands-on learning of R programming language with a firm grip on some advanced data analysis techniques. The course and lab deal with the evaluation of data by using available R functions and packages. The course will help you to discover different patterns in datasets with the use of the R language, like cluster analysis, anomaly detection, and association rules. You will also learn to produce data and visual analytics through customizable scripts and commands.

## 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.

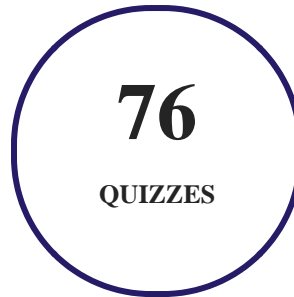
## 3. Exercises

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.



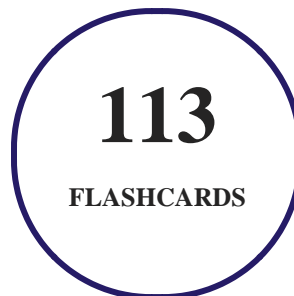
## 4. Quizzes

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.



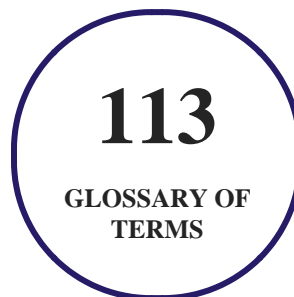
## 5. flashcards

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

- What this course covers?
- What you need for this course?
- Who this course is for?



- Conventions

## Chapter 2: Data Mining Patterns

- Cluster analysis
- Anomaly detection
- Association rules
- Questions
- Summary

## Chapter 3: Data Mining Sequences

- Patterns
- Questions
- Summary

## Chapter 4: Text Mining

- Packages
- Questions
- Summary

## Chapter 5: Data Analysis – Regression Analysis

- Packages
- Questions
- Summary

## Chapter 6: Data Analysis – Correlation

- Packages
- Questions
- Summary

## Chapter 7: Data Analysis – Clustering

- Packages
- K-means clustering
- Questions
- Summary

## Chapter 8: Data Visualization – R Graphics

- Packages
- Questions

- Summary

## Chapter 9: Data Visualization – Plotting

- Packages
- Scatter plots
- Bar charts and plots
- Questions
- Summary

## Chapter 10: Data Visualization – 3D

- Packages
- Generating 3D graphics
- Questions
- Summary

## Chapter 11: Machine Learning in Action

- Packages
- Dataset
- Questions

- Summary

## Chapter 12: Predicting Events with Machine Learning

- Automatic forecasting packages
- Questions
- Summary

## Chapter 13: Supervised and Unsupervised Learning

- Packages
- Questions
- Summary

## 12. Practice Test

**Here's what you get**

**45**

**PRE-ASSESSMENTS QUESTIONS**

**45**

**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

## Preface

- R Studio Sandbox

## Data Mining Patterns

- Plotting a Graph by Performing k-means Clustering
- Calculating K-medoids Clustering
- Displaying the Hierarchical Cluster
- Plotting Graphs By Performing Expectation-Maximization
- Plotting the Density Values
- Computing the Outliers for a Set
- Calculating Anomalies
- Using the apriori Rules Library

## Data Mining Sequences

- Using eclat to Find Similarities in Adult Behavior
- Finding Frequent Items in a Dataset
- Evaluating Associations in a Shopping Basket
- Determining and Visualizing Sequences
- Computing LCP, LCS, and OMD

## Text Mining

- Manipulating Text
- Analyzing the XML Text

## Data Analysis – Regression Analysis

- Performing Simple Regression
- Performing Multiple Regression

- Performing Multivariate Regression Analysis

#### **Data Analysis – Correlation**

- Performing Tetrachoric Correlation

#### **Data Analysis – Clustering**

- Estimating the Number of Clusters Using Medoids
- Performing Affinity Propagation Clustering

#### **Data Visualization – R Graphics**

- Grouping and Organizaing Bivariate Data
- Plotting Points on a Map

#### **Data Visualization – Plotting**

- Displaying a Histogram of Scatter Plots
- Creating an Enhanced Scatter Plot
- Constructing a Bar Plot
- Producing a Word Cloud

#### **Data Visualization – 3D**

- Generating a 3D Graphic
- Producing a 3D Scatterplot

#### **Machine Learning in Action**

- Finding a Dataset
- Making a Prediction

#### **Predicting Events with Machine Learning**

- Using Holt Exponential Smoothing

## Supervised and Unsupervised Learning

- Developing a Decision Tree
- Producing a Regression Model
- Understanding Instance-Based Learning
- Performing Cluster Analysis
- Constructing a Multitude of Decision Trees

## Here's what you get

**38**

LIVE LABS

**37**

VIDEO TUTORIALS

**01:59**

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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