uCertify

Course Outline

Software Engineering in the Era of Cloud Computing

04 Aug 2025

1. Exercises, Quizzes, Flashcards & Glossary

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

   Syllabus

   Chapter 1: Introduction

   Chapter 2: Requirements Engineering Framework for Service and Cloud Computing (REF-SCC)

   Chapter 3: Toward an Effective Requirement Engineering Approach for Cloud Applications

   Chapter 4: Requirements Engineering for Large-Scale Big Data Applications

   Chapter 5: Migrating from Monoliths to Cloud-Based Microservices: A Banking Industry Example

   Chapter 6: Cloud-Enabled Domain-Based Software Development

   Chapter 7: Security Challenges in Software Engineering for the Cloud: A Systematic Review

   Chapter 8: Software Engineering Framework for Software Defe...ent Using Machine Learning Techniques with Azure

   Chapter 9: Sentiment Analysis of Twitter Data Through Machine Learning Techniques

   Chapter 10: Connection Handler: A Design Pattern for Recovery from Connection Crashes

   Chapter 11: A Modern Perspective on Cloud Testing Ecosystems

   Chapter 12: Towards Green Software Testing in Agile and DevO...loud Virtualization for Environmental Protection

   Chapter 13: Machine Learning as a Service for Software Process Improvement

   Chapter 14: Comparison of Data Mining Techniques in the Cloud for Software Engineering

   Videos and How To
7. Live labs

   Lab Tasks

   Here's what you get

1. 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.

2. Quiz

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: Introduction

- Overview
- Objectives
- Organization

Chapter 2: Requirements Engineering Framework for Service and Cloud Computing (REF-SCC)

- Introduction
- BPMN as Requirements Engineering Method
- BPMN Requirements Engineering Life Cycle for Service and Cloud Computing (BPMN-RELC-SCC)
- BPMN Combined Infrastructure Overview
- Requirements Engineering Framework for Service and Cloud Computing (REF-SCC)
- Reference Architecture for Service and Cloud Computing
- Experimental Validation
- Conclusion

Chapter 3: Toward an Effective Requirement Engineering Approach for Cloud Applications

- Introduction
- Related Work
- Cloud Application Evolution
- Key Drivers of Cloud Applications
- Cloud Applications Requirements Engineering
- Cloud Application Qualities and Requirements
- Enabling Technologies for SaaS Qualities
- Conclusion

Chapter 4: Requirements Engineering for Large-Scale Big Data Applications

- Introduction
- Research Methodology Using Systematic Literature Review
- Related Work
- Requirements Engineering for Big Data
- Conclusion and Future Work

Chapter 5: Migrating from Monoliths to Cloud-Based Microservices: A Banking Industry Example

- Introduction

- Monolithic Applications: Background and Challenges
- Microservices: A Cloud-Based Alternative
- Building Cloud-Based Applications
- Transitioning from Monoliths to Cloud-Based Microservices
- Conclusion

Chapter 6: Cloud-Enabled Domain-Based Software Development

- Introduction
- Background
- Motivation and Related Work
- Suggested Development Paradigm
- Discussion
- Conclusion

Chapter 7: Security Challenges in Software Engineering for the Cloud: A Systematic Review

- Introduction
- Motivation
- Related Works

- Methodology
- Results
- Conclusion and Future Work

Chapter 8: Software Engineering Framework for Software Defe...ent Using Machine Learning Techniques with Azure

- Introduction
- Machine Learning Application to Software Engineering Analytics: Literature Review
- Machine/Deep Learning Approaches to Software Engineering
- Software Engineering Analytics Using Big Data
- Software Defects
- Software Defect Detection Techniques and Tools
- Bug Prediction in Software Development
- Neural Network Approach for Bug Prediction to Estimate Software Costs and to Feed New Requirements
- Service-Oriented Approach to Providing Bug Prediction
- Cloud Software Engineering for Machine Learning Applications
- Experiment with Microsoft Azure Machine Learning

- Critical Evaluations of Neural Network Approache...ir Application in Software Engineering Analytics
- Conclusion and Future Work

Chapter 9: Sentiment Analysis of Twitter Data Through Machine Learning Techniques

- Introduction
- Literature Review
- Methodology
- Results
- Conclusions and Future Research

Chapter 10: Connection Handler: A Design Pattern for Recovery from Connection Crashes

- Introduction
- Related Work
- General Design of a Connection-Oriented Application
- Connection Handler Design Pattern
- Design of Reliable Applications Using the Connection Handler Design Pattern
- Experimental Evaluation
- Conclusion

Chapter 11: A Modern Perspective on Cloud Testing Ecosystems

- Introduction
- Cloud Testing
- Cloud Testing and Deployment Models
- Tools and Frameworks for Cloud Testing
- Conclusion

Chapter 12: Towards Green Software Testing in Agile and DevO...loud Virtualization for Environmental Protection

- Introduction
- Cloud Computing and Services on the Cloud
- Green Computing
- Green Software Testing on the Cloud
- Cloud Vendors' Provision of TaaS
- Green Testing on the Cloud: Agile and DevOps Software Development
- Conclusion

Chapter 13: Machine Learning as a Service for Software Process Improvement

- Introduction
- Overview of Software Process Improvement
- Measurable Metrics for SPI
- Overview of Machine Learning
- Qualitative Research
- Development of the Maturity Model
- Prototype Development
- Evaluation
- Conclusion and Further Research

Chapter 14: Comparison of Data Mining Techniques in the Cloud for Software Engineering

- Introduction
- Related Works
- Materials and Methods
- Experimental Studies
- Conclusion

Videos and How To

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

4	04
VIDEOS	MINUTES

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

Requirements Engineering Framework for Service and Cloud Computing (REF-SCC)

- Classifying the BPMN Tasks
- Using BPMN as a Requirements Engineering Method

Toward an Effective Requirement Engineering Approach for Cloud Applications

- Key Drivers of Cloud Applications

Requirements Engineering for Large-Scale Big Data Applications

- Big Data Requirements Engineering
- Classifying the Functional Service Components

Migrating from Monoliths to Cloud-Based Microservices: A Banking Industry Example

- Migrating from Monolith to Microservices

Software Engineering Framework for Software Defe...ent Using Machine Learning Techniques with Azure

- Integration of AI with Software Engineering

Sentiment Analysis of Twitter Data Through Machine Learning Techniques

- Performing Sentiment Analysis
- Evaluating the Classifiers using Confusion Matrix

A Modern Perspective on Cloud Testing Ecosystems

- Cloud Testing
- Classifying Testing Model Benefits

Towards Green Software Testing in Agile and DevO...loud Virtualization for Environmental Protection

- Green Software Testing
- Classifying the CI/CD Stages

Comparison of Data Mining Techniques in the Cloud for Software Engineering

- Cloud Based Data Mining

Here's what you get

14	1	05
LIVE LABS	VIDEO TUTORIALS	MINUTES

You can’t stay away! Get in touch with our team to

3187 Independence Drive
Livermore, CA 94551,
United States

+1-415-763-6300

support@ucertify.com

www.ucertify.com