

uCertify

Course Outline

Cloud Computing Concepts, Technology and
Architecture



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Here's what you get

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Here's what you get

1. Course Objective

The Cloud Computing Concepts, Technology and Architecture course provides a comprehensive overview of cloud computing, covering the fundamental concepts, underlying technologies, and architectural principles that enable the delivery of computing as a service. You'll explore the history and evolution of cloud computing, examine the different service and deployment models, understand the core technologies powering the cloud (such as virtualization, containers, and serverless), and learn how to design and implement robust, scalable, and secure cloud-based systems.

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.

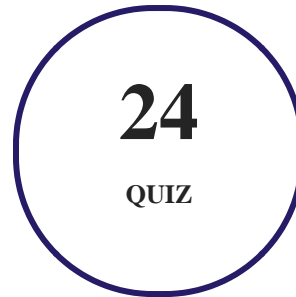
3. Exercises

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.

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EXERCISES

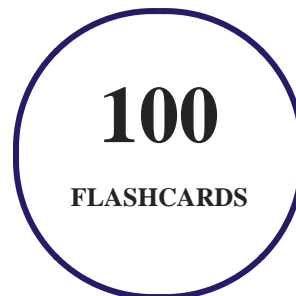
4. Quiz

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.



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

- Objectives of This Course
- What This Course Does Not Cover
- Who This Course Is For

- How This Course Is Organized
- Resources

Chapter 2: Case Study Background

- Case Study #1: ATN
- Case Study #2: DTGOV
- Case Study #3: Innovartus Technologies Inc

Chapter 3: Understanding Cloud Computing

- Origins and Influences
- Basic Concepts and Terminology
- Goals and Benefits
- Risks and Challenges
- Challenge Activity

Chapter 4: Fundamental Concepts and Models

- Roles and Boundaries
- Cloud Characteristics
- Cloud Delivery Models

- Cloud Deployment Models
- Challenge Activity

Chapter 5: Cloud-Enabling Technology

- Networks and Internet Architecture
- Cloud Data Center Technology
- Modern Virtualization
- Multitenant Technology
- Service Technology and Service APIs
- Case Study Example
- Challenge Activity

Chapter 6: Understanding Containerization

- Origins and Influences
- Fundamental Virtualization and Containerization
- Understanding Containers
- Understanding Container Images
- Multi-Container Types

- Case Study Example
- Challenge Activity

Chapter 7: Understanding Cloud Security and Cybersecurity

- Basic Security Terminology
- Basic Threat Terminology
- Threat Agents
- Common Threats
- Case Study Example
- Additional Considerations
- Case Study Example
- Challenge Activity

Chapter 8: Cloud Infrastructure Mechanisms

- Logical Network Perimeter
- Virtual Server
- Hypervisor
- Cloud Storage Device
- Cloud Usage Monitor

- Resource Replication
- Ready-Made Environment
- Container
- Challenge Activity

Chapter 9: Specialized Cloud Mechanisms

- Automated Scaling Listener
- Load Balancer
- SLA Monitor
- Pay-Per-Use Monitor
- Audit Monitor
- Failover System
- Resource Cluster
- Multi-Device Broker
- State Management Database
- Challenge Activity

Chapter 10: Cloud Security and Cybersecurity Access-Oriented Mechanisms

- Encryption
- Hashing
- Digital Signature
- Cloud-Based Security Groups
- Public Key Infrastructure (PKI) System
- Single Sign-On (SSO) System
- Hardened Virtual Server Image
- Firewall
- Virtual Private Network (VPN)
- Biometric Scanner
- Multi-Factor Authentication (MFA) System
- Identity and Access Management (IAM) System
- Intrusion Detection System (IDS)
- Penetration Testing Tool
- User Behavior Analytics (UBA) System
- Third-Party Software Update Utility
- Network Intrusion Monitor
- Authentication Log Monitor

- VPN Monitor
- Additional Cloud Security Access-Oriented Practices and Technologies
- Challenge Activity

Chapter 11: Cloud Security and Cybersecurity Data-Oriented Mechanisms

- Digital Virus Scanning and Decryption System
- Malicious Code Analysis System
- Data Loss Prevention (DLP) System
- Trusted Platform Module (TPM)
- Data Backup and Recovery System
- Activity Log Monitor
- Traffic Monitor
- Data Loss Protection Monitor
- Challenge Activity

Chapter 12: Cloud Management Mechanisms

- Remote Administration System
- Resource Management System

- SLA Management System
- Billing Management System
- Challenge Activity

Chapter 13: Fundamental Cloud Architectures

- Workload Distribution Architecture
- Resource Pooling Architecture
- Dynamic Scalability Architecture
- Elastic Resource Capacity Architecture
- Service Load Balancing Architecture
- Cloud Bursting Architecture
- Elastic Disk Provisioning Architecture
- Redundant Storage Architecture
- Multicloud Architecture
- Case Study Example
- Challenge Activity

Chapter 14: Advanced Cloud Architectures

- Hypervisor Clustering Architecture

- Virtual Server Clustering Architecture
- Load-Balanced Virtual Server Instances Architecture
- Nondisruptive Service Relocation Architecture
- Zero Downtime Architecture
- Cloud Balancing Architecture
- Resilient Disaster Recovery Architecture
- Distributed Data Sovereignty Architecture
- Resource Reservation Architecture
- Dynamic Failure Detection and Recovery Architecture
- Rapid Provisioning Architecture
- Storage Workload Management Architecture
- Virtual Private Cloud Architecture
- Case Study Example
- Challenge Activity

Chapter 15: Specialized Cloud Architectures

- Direct I/O Access Architecture
- Direct LUN Access Architecture

- Dynamic Data Normalization Architecture
- Elastic Network Capacity Architecture
- Cross-Storage Device Vertical Tiering Architecture
- Intra-Storage Device Vertical Data Tiering Architecture
- Load-Balanced Virtual Switches Architecture
- Multipath Resource Access Architecture
- Persistent Virtual Network Configuration Architecture
- Redundant Physical Connection for Virtual Servers Architecture
- Storage Maintenance Window Architecture
- Edge Computing Architecture
- Fog Computing Architecture
- Virtual Data Abstraction Architecture
- Metacloud Architecture
- Federated Cloud Application Architecture
- Challenge Activity

Chapter 16: Cloud Delivery Model Considerations

- Cloud Delivery Models: The Cloud Provider Perspective

- Cloud Delivery Models: The Cloud Consumer Perspective
- Case Study Example
- Challenge Activity

Chapter 17: Cost Metrics and Pricing Models

- Business Cost Metrics
- Cloud Usage Cost Metrics
- Cost Management Considerations
- Challenge Activity

Chapter 18: Service Quality Metrics and SLAs

- Service Quality Metrics
- Case Study Example
- SLA Guidelines
- Case Study Example
- Challenge Activity

Chapter 19: Appendix A: Case Study Conclusions

- A.1 ATN

- A.2 DTGOV
- A.3 Innovartus

Chapter 20: Appendix B: Common Containerization Technologies

- B.1 Docker
- B.2 Kubernetes

12. Practice Test

Here's what you get

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. Performance Based Labs

uCertify's performance-based labs are Live Labs. Learn the real world skills using Live Labs. uCertify Labs are cloud-based, device-enabled and can be easily integrated with an LMS. Features of uCertify labs:

- Provide hands-on experience in a safe, online environment
- Labs simulate real world, hardware, software & CLI environment
- Flexible and inexpensive alternative to physical Labs
- Comes with well-organized component library for every task
- Highly interactive - learn by doing
- Explanations and remediation available
- Videos on how to perform

Lab Tasks

- Exploring the AWS Dashborad
- Exploring AWS Services
- Exploring the Azure Portal
- Exploring Azure Services

Here's what you get



14. 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

- Exploring the AWS Dashborad
- Exploring AWS Services
- Exploring the Azure Portal
- Exploring Azure Services

Here's what you get



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