uCertify

# Course Outline

## Cloud Native AI and Machine Learning on AWS

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: Preface

   Chapter 2: Introducing the ML Workflow

   Chapter 3: Hydrating the Data Lake

   Chapter 4: Predicting the Future With Features

   Chapter 5: Orchestrating the Data Continuum

   Chapter 6: Casting a Deeper Net (Algorithms and Neural Networks)

   Chapter 7: Iteration Makes Intelligence (Model Training and Tuning)

   Chapter 8: Let George Take Over (AutoML in Action)

   Chapter 9: Blue or Green (Model Deployment Strategies)

   Chapter 10: Wisdom at Scale with Elastic Inference

   Chapter 11: Adding Intelligence with Sensory Cognition

   Chapter 12: AI for Industrial Automation

   Chapter 13: Operationalized Model Assembly (MLOps and Best Practices)

   Videos and How To

## 1. 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.


## 2. 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.

## 3. 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.

## 4. 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.

## 5.  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

## 6.  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

## Chapter 2: Introducing the ML Workflow

- Introduction
- Evolution of AI and ML
- Approaching an ML problem
- Overview of the ML workflow
- Introducing AI and ML on AWS
- Navigating the ML workflow
- Conclusion
- Points to Remember

## Chapter 3: Hydrating the Data Lake

- Introduction
- Lesson Scenario
- The Data Lake
- Securing your Buckets
- Securing your Data Lake
- Data Lakes for Machine Learning

- The Importance of Hydration
- Setting Up Your AWS Account
- Starting Datasets
- Streaming Data and the Data Lake
- Uncovering Patterns
- Amazon Athena
- Conclusion
- Points to Remember

## Chapter 4: Predicting the Future With Features

- Introduction
- Technical Requirements
- Introducing feature engineering
- Tokenize and remove punctuations
- Feature engineering for computer vision
- Resizing Images
- Cropping and tiling images
- Rotating images
- Converting to grayscale

- Converting to RecordIO format
- Dimensionality reduction with Principal Component Analysis
- Feature engineering for tabular datasets
- Exploring the data
- Imputing missing values
- Feature selection
- Feature frequency encoding
- Target mean encoding
- One hot encoding
- Feature scaling
- Feature normalization
- Binning
- Feature correlation
- Principal Component Analysis
- Conclusion
- Points to Remember

- Introduction
- Demystifying the data continuum
- Running feature engineering with AWS Glue ETL
- Data profiling with AWS Glue DataBrew
- Conclusion
- Points to Remember

## Chapter 6: Casting a Deeper Net (Algorithms and Neural Networks)

- Introduction
- Introducing Algorithms and Neural networks
- Simplifying the Algorithm versus Neural network conundrum
- Building ML solutions with Algorithms and Neural Networks
- Conclusion
- Points to Remember

## Chapter 7: Iteration Makes Intelligence (Model Training and Tuning)

- Introduction
- The Meaning of Training
- What Training Means for Deep Learning

- GPU vs CPU
- AWS Trainium
- Transfer Learning
- The Mise en Place of Model Training
- Defining Model Training and Evaluation Metrics
- Setting Up Model Hyperparameters
- Script vs Container
- Training Data Storage and Compute
- Training Scenarios
- Linear Regression
- Natural Language Processing
- Image Classification
- Conclusion
- Points to Remember

## Chapter 8: Let George Take Over (AutoML in Action)

- Introduction
- Running AutoML with SageMaker Canvas
- Automated Hyperparameter Tuning

- Using AutoGluon for AutoML
- Conclusion
- Points to Remember

## Chapter 9: Blue or Green (Model Deployment Strategies)

- Introduction
- Inference Options
- Choosing your Compute
- Amazon SageMaker Endpoint
- Inference at the Edge
- Deployment Mechanics
- After the Deployment
- Updating a Deployed Model
- Conclusion
- Points to Remember

## Chapter 10: Wisdom at Scale with Elastic Inference

- Introduction
- Understanding SageMaker ML Inference options

- SageMaker endpoints for serverless inference
- SageMaker transformer for batch inference
- Running Inference with SageMaker Hosting
- Inference with real-time endpoints
- Inference with serverless endpoints
- Inference with Batch Transform
- Adding a SageMaker Elastic Inference (EI) accelerator
- Conclusion
- Points to Remember

## Chapter 11: Adding Intelligence with Sensory Cognition

- Introduction
- Introducing AWS AI services
- Adding sensory cognition to your applications
- Conclusion
- Points to Remember

## Chapter 12: AI for Industrial Automation

- Introduction

- Overview of AI for Industrial Automation
- Cost of Poor Quality or COPQ
- Quality Control with Amazon Lookout for Vision
- Predictive Analytics with Amazon Lookout for Equipment
- Conclusion
- Points to Remember

## Chapter 13: Operationalized Model Assembly (MLOps and Best Practices)

- Introduction
- Lesson Scenario
- MLOps Defined
- Orchestration Options
- Phase Discrimination
- Best Practices using the AWS Well-Architected Lens for Machine Learning
- Conclusion