

**The Machine Learning Pipeline on AWS**

**Course Number:** AWS-136
**Duration:** 4 days

**Overview**

This live, online or in-person Machine Learning (ML) Pipeline on AWS training teaches attendees how to frame business challenges as ML challenges and use Amazon SageMaker to train, evaluate, tune, and deploy ML models.

You will choose a hands-on project to work on and then apply the skills you learn to your chosen project in each phase of the pipeline. You’ll have a choice of projects: fraud detection, recommendation engines, or flight delays.

Accelebrate is an AWS Training Partner (ATP) and this hands-on official AWS Classroom Training course is taught by an accredited Amazon Authorized Instructor (AAI).

**Prerequisites**

Students must have basic knowledge of:

* The Python Programming language
* The Jupyter Notebook environment
* AWS Cloud infrastructure (Amazon S3 and Amazon CloudWatch)

**Materials**

All ML Pipeline on AWS  training students will receive comprehensive courseware.

**Software Needed on Each Student PC**

A modern web browser and an Internet connection free of restrictive firewalls, so that the student can connect by SSH or Remote Desktop (RDP) into AWS virtual machines.

**Objectives**

* Select and justify the appropriate ML approach for a given business problem
* Use the ML pipeline to solve a specific business problem
* Train, evaluate, deploy, and tune an ML model in Amazon SageMaker
* Describe some of the best practices for designing scalable, cost-optimized, and secure ML pipelines in AWS
* Apply machine learning to a real-life business problem

**Outline**

* Introduction to Machine Learning and the ML Pipeline
	+ Overview of machine learning, including use cases, types of machine learning, and key concepts
	+ Overview of the ML pipeline
	+ Introduction to course projects and approach
* Introduction to Amazon SageMaker
	+ Introduction to Amazon SageMaker
	+ Amazon SageMaker and Jupyter notebooks
* Problem Formulation
	+ Overview of problem formulation and deciding if ML is the right solution
	+ Converting a business problem into an ML problem
	+ Amazon SageMaker Ground Truth
	+ Practice problem formulation
	+ Formulate problems for projects
* Preprocessing
	+ Overview of data collection and integration, and techniques for data preprocessing and visualization
	+ Practice preprocessing
	+ Preprocess project data
	+ Class discussion about projects
* Model Training
	+ Choosing the right algorithm
	+ Formatting and splitting your data for training
	+ Loss functions and gradient descent for improving your model
	+ The Machine Learning Pipeline on AWS
	+ Create a training job in Amazon SageMaker
* Model Evaluation
	+ How to evaluate classification models
	+ How to evaluate regression models
	+ Practice model training and evaluation
	+ Train and evaluate project models
	+ Initial project presentations
* Feature Engineering and Model Tuning
	+ Feature extraction, selection, creation, and transformation
	+ Hyperparameter tuning
	+ SageMaker hyperparameter optimization
	+ Practice feature engineering and model tuning
	+ Apply feature engineering and model tuning to projects
	+ Final project presentations
* Deployment
	+ How to deploy, inference, and monitor your model on Amazon SageMaker
	+ Deploying ML at the edge
	+ Creating an Amazon SageMaker endpoint
* Conclusion