



CertNexus Certified Artificial Intelligence Practitioner (CAIP)



Course Overview

The Certified Artificial Intelligence Practitioner™ (CAIP) shows you how to apply various approaches and algorithms to solve business problems through artificial intelligence (AI) and machine learning (ML), follow a methodical workflow to develop sound solutions, use open source, off-the-shelf tools to develop, test, and deploy those solutions, and ensure that they protect the privacy of users.

AI and ML have become an essential part of the toolset for many organizations. When used effectively, these tools provide actionable insights that drive critical decisions and enable organizations to create exciting, new, and innovative products and services.

Prerequisites

To ensure your success in this course, you should have at least a high-level understanding of fundamental AI concepts, including, but not limited to: machine learning, supervised learning, unsupervised learning, artificial neural networks, computer vision, and natural language processing. You can obtain this level of knowledge by taking the CertNexus AIBIZ™ (Exam AIZ-110) course. You should also have experience working with databases and a high-level programming language such as Python, Java, or C/C++.

Target Audience

Software Developers

IT Operators

Business Analyst

Data Science Practitioner

Artificial Intelligence (AI) Practitioner

Course Objectives

In this course, you will implement AI techniques in order to solve business problems. You will:

- Specify a general approach to solve a given business problem that uses applied AI and ML
- Collect and refine a dataset to prepare it for training and testing
- Train and tune a machine learning model
- Finalize a machine learning model and present the results to the appropriate audience
- Build linear regression models
- Build classification models
- Build clustering models
- Build decision trees and random forests
- Build support-vector machines (SVMs)
- Build artificial neural networks (ANNs)
- Promote data privacy and ethical practices within AI and ML projects

Duration

5 Days

Credentials

AIP-210

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Course Outline

Lesson 1: Solving Business Problems Using AI and ML

- Topic A: Identify AI and ML Solutions for Business Problems
- Topic B: Formulate a Machine Learning Problem
- Topic C: Select Approaches to Machine Learning

Lesson 2: Preparing Data

- Topic A: Collect Data
- Topic B: Transform Data
- Topic C: Engineer Features
- Topic D: Work with Unstructured Data

Lesson 3: Training, Evaluating, and Tuning a Machine Learning Model

- Topic A: Train a Machine Learning Model
- Topic B: Evaluate and Tune a Machine Learning Model

Lesson 4: Building Linear Regression Models

- Topic A: Build Regression Models Using Linear Algebra
- Topic B: Build Regularized Linear Regression Models
- Topic C: Build Iterative Linear Regression Models

Lesson 5: Building Forecasting Models

- Topic A: Build Univariate Time Series Models
- Topic B: Build Multivariate Time Series Models

Lesson 6: Building Classification Models Using Logistic Regression and k-Nearest Neighbor

- Topic A: Train Binary Classification Models Using Logistic Regression
- Topic B: Train Binary Classification Models Using k-Nearest Neighbor
- Topic C: Train Multi-Class Classification Models
- Topic D: Evaluate Classification Models
- Topic E: Tune Classification Models

Lesson 7: Building Clustering Models

- Topic A: Build k-Means Clustering Models
- Topic B: Build Hierarchical Clustering Models

Lesson 8: Building Decision Trees and Random Forests

- Topic A: Build Decision Tree Models
- Topic B: Build Random Forest Models

Lesson 9: Building Support-Vector Machines

- Topic A: Build SVM Models for Classification
- Topic B: Build SVM Models for Regression

Lesson 10: Building Artificial Neural Networks

- Topic A: Build Multi-Layer Perceptrons (MLP)
- Topic B: Build Convolutional Neural Networks (CNN)
- Topic C: Build Recurrent Neural Networks (RNN)

Lesson 11: Operationalizing Machine Learning Models

- Topic A: Deploy Machine Learning Models
- Topic B: Automate the Machine Learning Process with MLOps
- Topic C: Integrate Models into Machine Learning Systems

Lesson 12: Maintaining Machine Learning Operations

- Topic A: Secure Machine Learning Pipelines
- Topic B: Maintain Models in Production

Appendix A: Mapping Course Content to CertNexus® Certified Artificial Intelligence (AI) Practitioner (Exam AIP-210)

Appendix B: Datasets Used in This Course

