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## CertNexus Certified Artificial Intelligence Practitioner (CAIP)

### Overview

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Artificial intelligence (AI) and machine learning (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. This course empowers you to apply various approaches and algorithms to solve business problems through AI and ML, follow a methodical workflow to develop sound solutions, and use open source, off-the-shelf tools to develop, test, and deploy those solutions, and ensure that they protect the privacy of users.

**Course includes an exam voucher for the Certified Artificial Intelligence Practitioner (CAIP) exam (exam AIP-110).**

This course may earn a Credly Badge.

### Prerequisite Comments

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A typical student in this course should have several years of experience with computing technology, including some aptitude in computer programming. This course is also designed to assist students in preparing for the CertNexus® Certified Artificial Intelligence (AI) Practitioner (Exam AIP-110) certification.

### Target Audience

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The target student may be a programmer looking to develop additional skills to apply machine learning algorithms to business problems, or a data analyst who already has strong skills in applying math and statistics to business problems, but is looking to develop technology skills related to machine learning.

### Course Objectives

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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.

### Course Outline

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## 1 - Solving Business Problems Using AI and ML

Topic A: Identify AI and ML Solutions for Business Problems

Topic B: Follow a Machine Learning Workflow

Topic C: Formulate a Machine Learning Problem

Topic D: Select Appropriate Tools

## 2 - Collecting and Refining the Dataset

Topic A: Collect the Dataset

Topic B: Analyze the Dataset to Gain Insights

Topic C: Use Visualizations to Analyze Data

Topic D: Prepare Data

## 3 - Setting Up and Training a Model

Topic A: Set Up a Machine Learning Model

Topic B: Train the Model

## 4 - Finalizing a Model

Topic A: Translate Results into Business Actions

Topic B: Incorporate a Model into a Long-Term Business Solution

## 5 - Building Linear Regression Models

Topic A: Build Regression Models Using Linear Algebra

Topic B: Build Regularized Regression Models Using Linear Algebra

Topic C: Build Iterative Linear Regression Models

## 6 - Building Classification Models

Topic A: Train Binary Classification Models

Topic B: Train Multi-Class Classification Models

Topic C: Evaluate Classification Models

Topic D: Tune Classification Models

## 7 - Building Clustering Models

Topic A: Build k-Means Clustering Models

Topic B: Build Hierarchical Clustering Models

## 8 - Building Decision Trees and Random Forests

Topic A: Build Decision Tree Models

Topic B: Build Random Forest Models

## 9 - Building Support-Vector Machines

Topic A: Build SVM Models for Classification

Topic B: Build SVM Models for Regression

## 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)

## 11 - Promoting Data Privacy and Ethical Practices

Topic A: Protect Data Privacy

Topic B: Promote Ethical Practices

Topic C: Establish Data Privacy and Ethics Policies

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