

## CN-CAIP CERTIFIED ARTIFICIAL INTELLIGENCE (AI) PRACTITIONER



DURATION	LEVEL	TECHNOLOGY	DELIVERY METHOD	TRAINING CREDITS
5 Days	Intermediate	Artificial Intelligence	Classroom, Virtual or Onsite	NA

### INTRODUCTION

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 shows you how to apply various approaches and algorithms to solve business problems through AI and ML, all while following a methodical workflow for developing data-driven solutions. This course includes hands-on activities for each topic area.

### AUDIENCE PROFILE

The skills covered in this course converge on three areas: software development, applied math and statistics, and business analysis. Target students for this course may be strong in one or two of these areas and looking to round out their skills in the other areas so they can apply artificial intelligence (AI) systems, particularly machine learning models, to business problems. So 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.

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-210) certification.

### PREREQUISITES

To ensure your success in this course, you should be familiar with the concepts that are foundational to data science, including:

- The overall data science and machine learning process from end to end: formulating the problem; collecting and preparing data; analyzing data; engineering and preprocessing data; training, tuning, and evaluating a model; and finalizing a model.
- Statistical concepts such as sampling, hypothesis testing, probability distribution, randomness, etc.
- Summary statistics such as mean, median, mode, interquartile range (IQR), standard deviation, skewness, etc.
- Graphs, plots, charts, and other methods of visual data analysis.

You can obtain this level of skills and knowledge by taking the CertNexus course Certified Data Science Practitioner (CDSP) (Exam DSP-110).

You should also have experience working with databases and a high-level programming language such as Python, Java, or C/C++. You can obtain this level of skills and knowledge by taking the following Mecer Inter-Ed or comparable course:

- Python Programming: Introduction to Advanced

### COURSE OBJECTIVES

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

- Solve a given business problem using AI and ML
- Prepare data for use in machine learning.
- Train, evaluate, and tune a machine learning model.
- Build linear regression models.
- Build forecasting models.
- Build classification models using logistic regression and k-nearest neighbor.
- Build clustering models.
- Build classification and regression models using decision trees and random forests.
- Build classification and regression models using support-vector machines (SVMs).
- Build artificial neural networks for deep learning
- Put machine learning models into operation using automated processes.
- Maintain machine learning pipelines and models while they are in production.

### COURSE TOPICS

#### Lesson 1: Solving Business Problems Using AI and ML

- Identify AI and ML Solutions for Business Problems

- Formulate a Machine Learning Problem

- Select Approaches to Machine Learning

## Lesson 2: Preparing Data

- Collect the Data
- Transform Data
- Engineer Features
- Work with Unstructured Data

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

- Train a Machine Learning Model
- Evaluate and Tune a Machine Learning Model

## Lesson 4: Building Linear Regression Models

- Build Regression Models Using Linear Algebra
- Build Regularized Linear Regression Models
- Build Iterative Linear Regression Models

## Lesson 5: Building Forecasting Models

- Build Univariate Time Series Models

- Build Multivariate Time Series Models

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

- Train Binary Classification Models Using Logistic Regression
- Train Binary Classification Models Using k-Nearest Neighbor
- Train Multi-Class Classification Models
- Evaluate Classification Models
- Tune Classification Models

## Lesson 7: Building Clustering Models

- Build K-means Clustering Models
- Build Hierarchical Clustering Models

## Lesson 8: Building Decision Trees and Random Forests

- Build Decision Tree Models
- Build Random Forest Models

## Lesson 9: Building Support-Vector Machines

- Build SVM Models for Classification
- Build SVM Models for Regression

## Lesson 10: Building Artificial Neural Networks

- Build Multi-Layer Perceptrons (MLP)
- Build Convolutional Neural Networks (CNN)
- Build Recurrent Neural Networks (RNN)

## Lesson 11: Operationalizing Machine Learning Models

- Deploy Machine Learning Models
- Automate the Machine Learning Process with MLOps
- Integrate Models into Machine Learning Systems

## Lesson 12: Maintaining Machine Learning Operations

- Secure Machine Learning Pipelines
- Maintain Models in Production

## ASSOCIATED CERTIFICATIONS & EXAM

The Certified Artificial Intelligence (AI) Practitioner Exam #AIP-210 will certify that the candidate has the knowledge and skill set of AI concepts, technologies, and tools that will enable them to become a capable AI practitioner in a wide variety of AI-related job functions.

Upon completion of this course, delegates will receive an MIE attendance certificate.