

AI & Machine Learning

Foundational Data Course



Course Timeframe

4-week part-time course. 2 lectures per week.

Course Delivery

Live online.
Office hours are included for course duration.

Who is This Course For?

- Individuals with a strong educational background and professionals outside of STEM with little to no experience in data who have a strong interest in learning how to leverage data science techniques and skills
- Junior business analysts, data analysts, market intelligence analysts, product operations, design operations, project managers, and professionals looking to get a foundational understanding of AI/data science techniques and learn how to leverage AI tools to solve simple to intermediate real-world business problems

Who is This Course Not For?

Experienced data science, data analytics, or data engineering professionals

Prerequisites:

“Data Wrangling with Python” or programming experience

Course Learning Objectives

This course will build upon your Python knowledge and introduce you to the world of machine learning. You'll use more advanced tools to learn regression, the bias/variance tradeoff, techniques to control overfitting, scikit-learn API, classification, dimensionality reduction, clustering, and more.

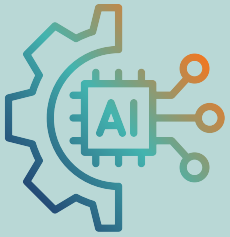
By The End of This Course, Students Will...

- Understand the basic concepts and terminology of machine learning
- Build and train simple machine learning models for supervised and unsupervised problems
- Automate the transformation of data with pipelines
- Evaluate the performance of ML algorithms and properly tune hyperparameters

Use Case Examples

- Predict the next quarter's sales for a number of store locations
- Identify shipments that are most likely to arrive late
- Automatically categorize customers into relevant groups based on dominant characteristics
- Identify prospects with a high propensity to convert to client
- Predict customers with a high propensity to churn
- Anticipate product usage over the next month, based on past trends

[Click here to learn more](#)



AI & Machine Learning Course Syllabus

Foundational Data Course



An Eight-Module Structured Learning Path

Module 1: Intro to AI and Machine Learning

Basic definitions of machine learning, types of machine learning problems, training and evaluating machine learning models

Module 2: Scikit-Learn API

Understanding Predictors, transformers, and pipelines

Module 3: Regression

Building Regression models: Linear regression, regression metrics, feature engineering, regularization

Module 4: Bias, Variance, and Overfitting

Evaluating In-sample and out-of-sample errors, the bias-variance tradeoff, choosing hyperparameters with cross-validation, train, test, and validation sets

Module 5: Introduction to Classification

Building Classification models: Logistic regression, classification metrics, probabilistic models, multiclass classification

Module 6: Classification: Predicting Customer Churn

Feature engineering, dealing with categorical features, random forest classification, dealing with unbalanced classes

Module 7: Dimensionality Reduction

Principle component analysis, explained variance, choosing how many components, interpreting principal components

Module 8: Scikit-Learn Workflow

Using the ColumnTransformer, building custom classes, using the FunctionTransformer, imputing missing values

Includes hands on exercises and mini project