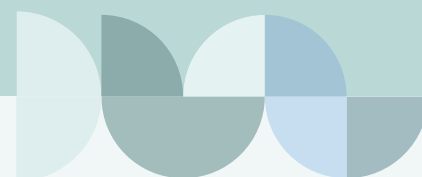


# AI & Machine Learning

## 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.

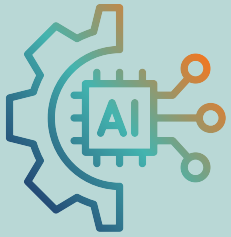
### By The End of This Course, Students Will...

- 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