

AI & Data Science: Foundation & Specialization

Course Overview & Outline



CEDARPRO
ACADEMY



Course Overview

This course is designed for aspiring and experienced product managers looking to develop their skills in managing data and AI-driven products. Participants will learn to navigate the modern product management landscape, focusing on customer-centric approaches, data analytics, and AI integration. This hands-on course will equip you with the tools to manage products from inception to launch, incorporating customer insights, market analysis, and continuous product improvement.

Training Requisite

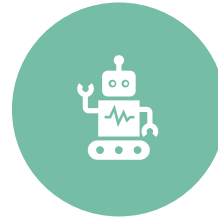
- **To enroll in this course, participants should:**
 - Have basic knowledge of statistics, probability, and Python programming.
 - Be comfortable with mathematical concepts such as linear algebra and calculus.
 - Commit to approximately 10–15 hours per week for learning.
 - Have access to a computer with internet connectivity.



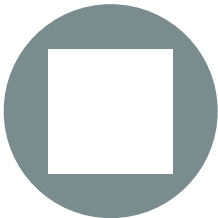
Course Format & Set-Up



Pre-Work: Complete introductory lessons on Python programming, basic statistics, and linear algebra.



Instructor-Led Sessions (16 weeks): Weekly live sessions covering AI and data science techniques.



Hands-On Labs: Weekly practical assignments using tools such as Python, Pandas, Numpy.



Homework: Weekly exercises focused on machine learning models and analysis.



Presentations: Share your analysis, models, and receive feedback.



Live Project: Apply AI and data science techniques to a real-world project.

Weeks 1-4: Fundamentals of AI & Data Science

Weeks 1-2: Introduction to AI & Data Science

- Key topics: Python, Jupyter Notebook, Pandas, Numpy
- Practical Labs: Basic data manipulation and exploratory data analysis (EDA).

Weeks 3-4: Data Wrangling & Visualization

- Key topics: Data cleaning, preparation, and visualization.
- Tools: Pandas, Matplotlib, Seaborn.

Weeks 5-8: Supervised, Unsupervised Learning & Optimization

Weeks 5-6:
Supervised
Learning
(Regression,
Classification)

Key topics: Linear regression, logistic regression, decision trees.
Tools: Scikit-learn.



Weeks 7-8:
Unsupervised
Learning
(Clustering,
PCA)

Key topics: K-means clustering, hierarchical clustering, PCA.

Weeks 9-10: Advanced Machine Learning Algorithms

Weeks 9-10: Advanced Machine Learning Algorithms

- Key topics: Random Forest, Gradient Boosting, XGBoost.
- Practical Labs: Fraud detection using Random Forest.

Weeks 11-14: Deep Learning

Weeks 11-12: Introduction to Deep Learning

- Key topics: Neural networks, TensorFlow, Keras.
- Practical Labs: Building a neural network to classify images (MNIST).

Weeks 13-14: AI Applications in Industry

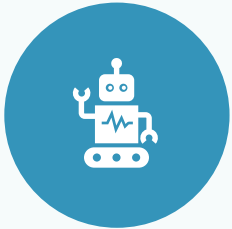
- Applications in healthcare, finance, retail.

Weeks 15-16: Live Project & Specialization

Weeks 15-16: Live Project & Specialization

- Work on a capstone project applying AI and data science techniques.
- Presentation and final report submission.

Learning Outcomes



Master data manipulation, machine learning models, and AI techniques.



Build and evaluate machine learning models for regression, classification, and clustering.



Use deep learning tools such as TensorFlow and Keras to solve problems.



Apply AI techniques to real-world datasets in healthcare, finance, and more.



Potential Roles

Data Scientist

Machine Learning Engineer

AI Specialist

Data Analyst

AI Consultant

