

Data Science & GenAI expertise

275 Academic Hours

Course Overview

The Data Science & GenAI Expertise program is a comprehensive, in-depth training track designed to prepare professionals for hands-on work in data science and generative AI. Participants gain strong foundations in Python and the PyData ecosystem, perform end-to-end EDA and machine learning workflows, and dive deep into Deep Learning and Generative AI, including LLMs, Transformers, RAG, and Agentic AI. The program emphasizes practical, hands-on learning through real business use cases and projects, culminating in a professional GitHub portfolio that supports graduates' entry into the industry.

Target Audience

- Software developers and engineers aiming to specialize in data & AI
- Database and information systems professionals
- Data analysts and BI professionals transitioning into data science
- Graduates of relevant degrees (Computer Science, Information Systems, Engineering, Statistics/Mathematics, Life Sciences, or related fields)
- Candidates seeking a practical career path in Data Science and GenAI

What Participants Will Gain?

Graduates complete the program with end-to-end data science capabilities from data acquisition and EDA to building machine learning and deep learning models and the ability to develop advanced GenAI applications using LLMs, RAG, and agentic workflows. They graduate with a rich GitHub portfolio including real-world projects and a final capstone project, positioning them strongly for industry roles in Data Science and AI engineering.

Course Syllabus

Module 1: Python

- The working environment
- Data types
- Data structures (list, dictionary, etc.)
- Flow control (if-else, for-in, etc.)
- Textual interface
- Functions (inc. lambda)
- Working with files
- Object-Oriented Programming (OOP) basics
- Python API's
 - Python Standard Library
 - Modules and packages
 - datetime
 - Regular expressions

Module 2: EDA

- Pre-processing with pandas
 - Basic concepts
 - Indexation and filtering
 - Aggregations and advanced manipulations
- Mathematical packages (scipy, numpy)
- Visualization packages (matplotlib, seaborn)
- Working with data resources (JSON files, databases & web)

Module 3: Machine Learning

Concepts

- Supervised & unsupervised learning
- Pipelines – Transformers & Estimators
- Feature engineering
- Dimensionality reduction
- Model selection – Cross-validation & grid search
- Overfitting & regularization
- Ensemble methods – Voting, bagging & boosting
- Imbalanced data
- Anomaly detection
- Clustering
- Metrics and similarities
- Scoring

Course Syllabus

Models

- Linear regression
- Logistic regression
- Decision trees (inc. random forest)
- K-nearest neighbors (k-NN)
- K-means
- Agglomerative clustering

Module 4: Deep Learning & Generative AI

- Deep Learning
 - Introduction to Neural Networks
 - Deep Learning with Pytorch
 - Deep Learning Architectures
- Generative AI Fundamentals
 - Transformers + Diffusion architectures + Embeddings
 - HuggingFace
 - Behind the Scenes of an LLM
- Practical LLMs
 - LLM-based Applications Overview
 - Prompt engineering
 - LangChain + LlamaIndex frameworks
 - Use Case: RAG
 - Agentic AI
 - Fine tuning (why, approaches, tools)
 - Workflow automation tools
 - Evaluation

Module 5: Project

In this section, participants will work on a final capstone project, with most of the progress carried out independently outside of class. Classroom sessions will be dedicated to mentoring, guidance, consultation, and peer idea exchange. During these sessions, we will also provide introductory workshops on NLP, Big Data (Spark), and working in a development environment (PyCharm).

Why Naya College?



Specialization in Data and AI – Naya College is Israel's leading, most established, and only college specializing in the world of data & AI since 2010.



Leading Instructors – All of Naya College's instructors are experienced managers from Israel's data industry.



Learn technology from a true tech company – Naya College is much more than a college. We live and breathe technology and lead the remote-learning course industry. Throughout the course, you will learn using the most advanced technologies in the field, and the course learning experience is based on practical, real-world experience.



Personal Consultation and Guidance – Not sure which track is right for you? In a personal consultation call, we'll understand your experience, goals, and aspirations, and help you choose the training program that best suits your career path.



Flexible Payment Options – Convenient installment plans with no registration fees, so you can start learning with peace of mind and focus on your success.



Support All the Way to Employment – Career development workshops, interview preparation workshops, job-matching support, and connections to leading companies.



Full Flexibility in Learning – No obligation to attend class. All classes are recorded on Zoom and students can complete the lessons at their own pace.

OUR ALUMNI WORK WITH THE BEST

 Payoneer





 SciPlay

 amdocs





Medtronic

 NATURAL
INTELLIGENCE



Artlist

 PAGAYA



WIX

בנק הפועלים 

 similarweb





NICE

VERITAS

 riskified

Deloitte.





Scan to check us out on Alumni →



So, how do we move forward from here?

Take the first step with a professional program,
personal guidance, and a connection to the world of work.

For any questions, feel free to contact us by phone or email:

Liat Peretz – our study advisor:

054-612-8560

Liat_Peretz@epam.com