

KOENIG SOLUTIONS · COURSE OUTLINE

Machine Learning Essentials with Python

Learn to apply AI and Machine Learning concepts, from algorithms and neural networks to NLP and business decision-making.

9

MODULES

39

TOPICS

COURSE OVERVIEW

This course introduces artificial intelligence and machine learning concepts, covering the mathematics and algorithms behind supervised and unsupervised techniques such as classification, regression, clustering and ensemble methods. It then examines how AI supports business decision-making and predictive analytics, before exploring large language models, generative AI and GPT. The course continues with the fundamentals of neural networks, natural language processing and sentiment analysis, and AI-driven image, video and audio processing. It closes with the technical tools used in data science and deep learning, including Python, NumPy, Pandas and SciKitLearn, and a look at practical applications and future trends in business AI.

WHO THIS COURSE IS FOR

Business Analysts

Data Scientists

Software Developers

Business Decision Makers

IT Professionals

LEARNING OBJECTIVES

- Explain what AI and Machine Learning are and their business relevance
- Describe supervised and unsupervised learning algorithms
- Apply classification, regression and clustering methods
- Analyse how AI supports business decision-making and predictive analytics
- Explain large language models and generative AI such as GPT
- Describe the structure and training of neural networks
- Apply natural language processing techniques for sentiment analysis
- Identify AI tools used in data science and deep learning

9 Modules, 39 Topics

01

Introduction to AI & Machine Learning

TOPICS

- Understand what AI and Machine Learning are and why they're critical for modern business
- Exploring definitions and types of AI
- Discussing AI in the Modern Age and its role in business
- **Embrace Change:** Learn and Build Confidence using the Tools - Don't be Replaced By Them

02

Deeper Dive into Machine Learning

TOPICS

- Basics of how mathematics are used in or apply to AI
- **Algorithms:** What are they and how are they used in AI and ML
- Supervised vs Unsupervised
- Classification, Regression, Clustering, Dimensionality Reduction, and Ensemble Methods
- The role of Machine Learning in AI and business decision-making
- Review a real business scenario where Machine Learning was used to increase efficiency

03

Leveraging AI in Business & Decision Making

TOPICS

- **Discussing key business areas where AI adds value:** Operations, Marketing, Sales, HR, content development, coding and software development
- Explore how AI is used in business decision-making
- Introduction to predictive analytics
- Using AI for strategic decision-making

04

Hot Trends for AI in Business: Large Language Models (LLM), Generative AI and GPT

TOPICS

- Understand the basics of Generative AI and how it differs from other AI techniques
- Introduction to GPT and its applications in various sectors
- Explore how GPT uses machine learning to generate human-like text based on the input it receives
- Understand the concept of language models and how they are trained using large amounts of text data

05

Basics of Neural Networks

TOPICS

- What are they and how are they used?
- **Basic parts:** Neurons, activation functions, interactions
- **Types:** Feedforward, recurrent, convolutional neural networks overview
- **How they learn:** Forward propagation, backpropagation explained
- **Training Neural Networks:** Importance of data preprocessing in training
- **Deep Neural Networks:** Advantages and practical applications overview
- **In Action:** Image recognition, language processing, etc. use cases.
- **Ethical Considerations:** Addressing biases and ethical concerns in neural networks

06

Natural Language Processing (NLP) & Sentiment Analysis

TOPICS

- What is NLP and how is it used?
- NLP Language and Semantic Meaning, Bigrams, Trigrams, n-Grams, Root Stemming and Branching
- **Introduction to Sentiment Analysis:** Sentiment indicators, Sentiment Sampling, Predicting Elections based on Sentiment Analysis

07

Using AI for Image, Video, and Audio Processing

TOPICS

- Learn about Image processing and Identification, Facial Analysis, Audio Processing
- Discuss the role of AI in analyzing streaming video and real-world AV processing

08

AI for Business Technical Tools: Data Science, Deep Learning & The Cloud

TOPICS

- Applying AI in Data Science overview
- **Tools:** Python, NumPy, Pandas, SciKitLearn, Hadoop, Spark
- NoSQL Databases
- Deep Learning overview
- AI for Business in the Cloud overview

09

Practical Applications and the Future of AI in Business

TOPICS

What's next in applied AI for businesses · New AI trends shaping the future of business · Ethical considerations when implementing AI

NOTES

Next-Steps

- Hands-on Practice
- Resources
- AI & ML Communities

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

Learn the Way That Suits You

Classroom Training

Live Online Classes (ILO)

Fly-Me-A-Trainer (FMAT)

Flexi (Self-Paced)

1-on-1 Training

Ready to Get Started?

Talk to a learning advisor about schedules, group training and customised delivery.

Visit koenig-solutions.com

✉ info@koenig-solutions.com