

Course Name	AI Driven Business Analytics and Decision Making for On-Premise Deployments
Course Duration	40 hours (10 Days)

Important Note:

- Courseware - Reference material/ppt along with lab files/exercises will be provided
- All labs will be performed on Open Source Platform.
- Students must have functional knowledge of Python.

Topic	Content Description	Activity
1. Introduction to AI and MLOps	- Overview of AI, Machine Learning, and MLOps - Importance of AI/MLOps in Business - Difference between AI/ML and Statistical Use Cases	Group Discussion on Business Use Cases for AI vs Statistics
2. AI/MLOps Pipeline Overview	- Overview of an AI/ML pipeline (data collection, preparation, training, deployment) - Understanding the components of MLOps	Break down a real-world use case into AI/ML pipeline steps
3. Problem Framing	- Breaking down business use cases into sub-problems - Identifying features and targets/labels	Exercise: Use a business case to define features and labels
4. On-Prem Data Platform Engineering for Analytics at Scale	- Overview of Big data platforms for analytics - Data ingestion pipelines technologies - Best practices for dealing with highly changing schemas datasets	
5. Exploratory Data Analysis (EDA)	- Importance of EDA - Data Visualization Techniques (matplotlib, seaborn) - Identifying trends, patterns, outliers	Practical: Perform EDA on a dataset using matplotlib and seaborn
6. Machine Learning Algorithms	- Overview of ML Algorithms - Selecting the right algorithm for the business use case	Interactive: Choose the right ML algorithm for given problems
7. Fully On-Premise open LLM and RAG Systems	Self-hosted LLM serving (vLLM / llama.cpp / Ollama) and open-weight model selection for offline, regulated use Techniques for hallucination control and prompt-injection defense for retrieval pipelines	Hands on: Local deployment of vLLM/Ollama/llama.cpp
8. Decision Engines and Explainable AI	- Hybrid rule + ML decision engines - Policy-as-versioned-data patterns for reproducible, auditable decisions over time	Online review of existing decision engines and explainable AI solutions
9. Introduction to Generative AI (GenAI)	- Overview of GenAI - Key Concepts: Transformers, Attention Mechanism, GPT - Applications of GenAI in NLP, Vision, and more	Practical: Implement a basic text generation model using GPT
10. Use Cases of GenAI	- Exploring Real-world Applications (Chatbots, Text Summarization, Image Generation) - Integrating GenAI into Business Solutions	Discussion and Analysis of GenAI in industry applications
11. Ethics in AI/ML & GenAI	- Ethical Challenges in AI/ML - Fairness, Bias, and Transparency - AI Governance and Legal Considerations	Case Study: Analyze and discuss ethical dilemmas in AI/ML