Shiva Concept Solution

www.shivaconceptsolution.com

Generative AI – Practical Job Oriented Syllabus
Designed for Indian IT Industry (2025+)

Generative AI & LLM Development
Practical Job-Oriented Syllabus (India IT Focus)

Designed to make students job-ready for roles like Gen AI Engineer, AI Developer, LLM Engineer, and AI Product Engineer in Indian IT companies.

Module 1: Programming Foundations for AI

● Python fundamentals for AI development
● Data types, loops, functions, OOP concepts
● Working with Jupyter Notebook
● Hands-on coding exercises

Module 2: Data Handling & Visualization

● NumPy for numerical computing
● Pandas for data analysis
● Data cleaning & preprocessing
● Matplotlib & Plotly for visualization

Module 3: Machine Learning Essentials

● Supervised learning (Regression, Classification)
● Unsupervised learning (Clustering, Dimensionality Reduction)
● Model evaluation & performance metrics
● Scikit-Learn practical labs

Module 4: Deep Learning Fundamentals

● Neural networks basics
● TensorFlow & Keras hands-on
● PyTorch introduction
● Training & optimizing deep learning models

Module 5: Natural Language Processing (NLP)

● Text preprocessing techniques
● NLTK & SpaCy practical usage
● Word embeddings (Word2Vec, GloVe)
● Text classification & sentiment analysis

Module 6: Generative AI & Large Language Models

● Introduction to Generative AI
● LLM architecture concepts
● Transformers & attention mechanism
● Using Hugging Face models

Module 7: Prompt Engineering & RAG

● Prompt engineering techniques

- Few-shot & zero-shot prompting
- Embeddings & vector databases
- Retrieval Augmented Generation (RAG)

Module 8: AI Agents & Chatbot Development

- LangChain fundamentals
- Building AI agents
- Chatbot development with LLMs
- Tool calling & memory handling

Module 9: Model Deployment & Cloud AI

- Flask & FastAPI for AI APIs
- Deploying AI models
- AWS & Azure AI services overview
- Scalable AI application design

Module 10: Responsible AI & Explainability

- AI ethics & bias
- Model explainability basics
- Security & data privacy considerations
- Compliance for enterprise AI

Module 11: Capstone Projects

- Gen AI chatbot for business
- Document Q&A; system using RAG
- AI content generator
- End-to-end project deployment

Module 12: Interview & Placement Preparation

- 300+ Gen AI & LLM interview questions
- Resume & LinkedIn optimization
- Mock interviews
- Career guidance for Indian IT market