

## **JOB READY AI COURSE WITH PYTHON, NLP, GEN-AI, RAG, AGENTIC-AI AND MLOPS**

**Duration- 3-4 Months**



- A live project with real-time implementation
- Lots of Practical exercises
- 20 + hands on projects
- Interview Preparation
- Resume building
- Mock Interview

**This course is highly curated and uniquely designed according to the latest industry standards. You will learn all the stack required to work in Artificial Intelligence with real-time industry projects.**

## **Learn PYTHON**



Python has become the dominant language for Artificial Intelligence (AI) due to its readable, English-like syntax and a vast ecosystem of pre-built libraries that allow developers to focus on solving problems rather than writing complex low-level code.

# Detailed Syllabus:

**1 Introduction to Python**

**2 Getting Started**

**3 Python Basics**

**4 Strings**

**5 Decision Control Instruction**

**6 Repetition Control Instruction**

**7 Console Input/output**

**8 Lists**

**9 Tuples**

**10 Sets**

**11 Dictionaries**

**12 Comprehensions**

**13 Functions**

**14 Recursion**

**15 Functional Programming**

**16 Modules and Packages**

**17 Namespaces**

**18 Classes and Objects**

**19 Intricacies of Classes and Objects**

**20 Inheritance in Python**

**21 Iterators and Generators**

**22 Exception Handling**

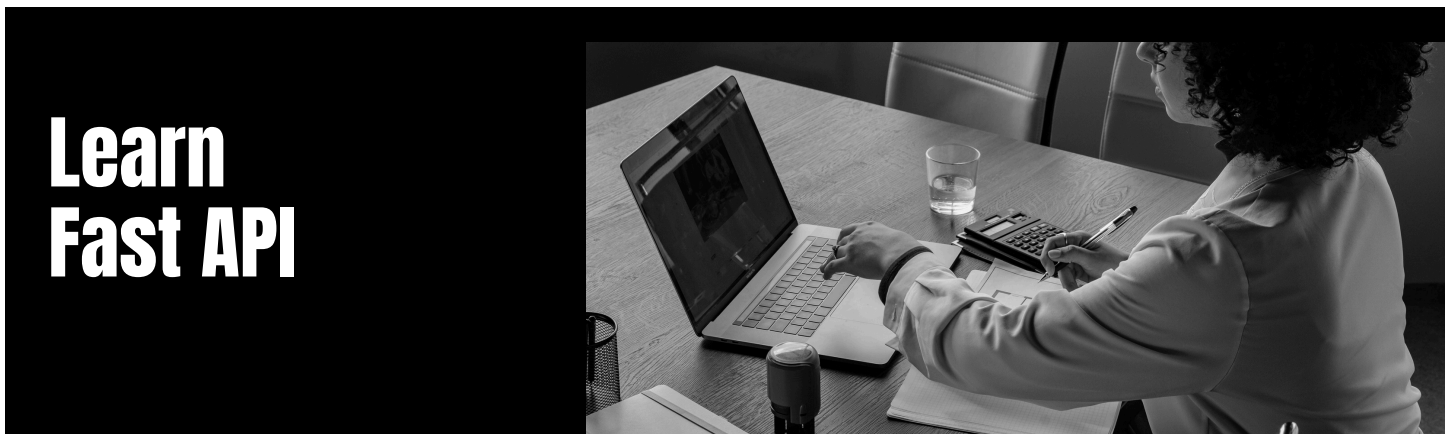
**23 File Input/Output**

**24 Miscellany**

**25 Concurrency and Parallelism**

**26 Synchronization**

**We'll dive into a variety of programs for every topic! ✨**



FastAPI is a modern, fast (high-performance), web framework for building APIs with Python based on standard Python type hints.

## **Detailed Syllabus:**

**1. What is an API? | Introduction to APIs**

**2. HTTP Methods in FastAPI**

**3. Path & Query Params in FastAPI**

4. Pydantic Python library for data validation
5. Post, PUT, Delete Request in FastAPI
6. FastAPI + Docker
7. Deploy FASTAPI API and Postman testing

**We'll dive into a variety of programs for every topic! ✨**

## **Learn Natural Language Processing**



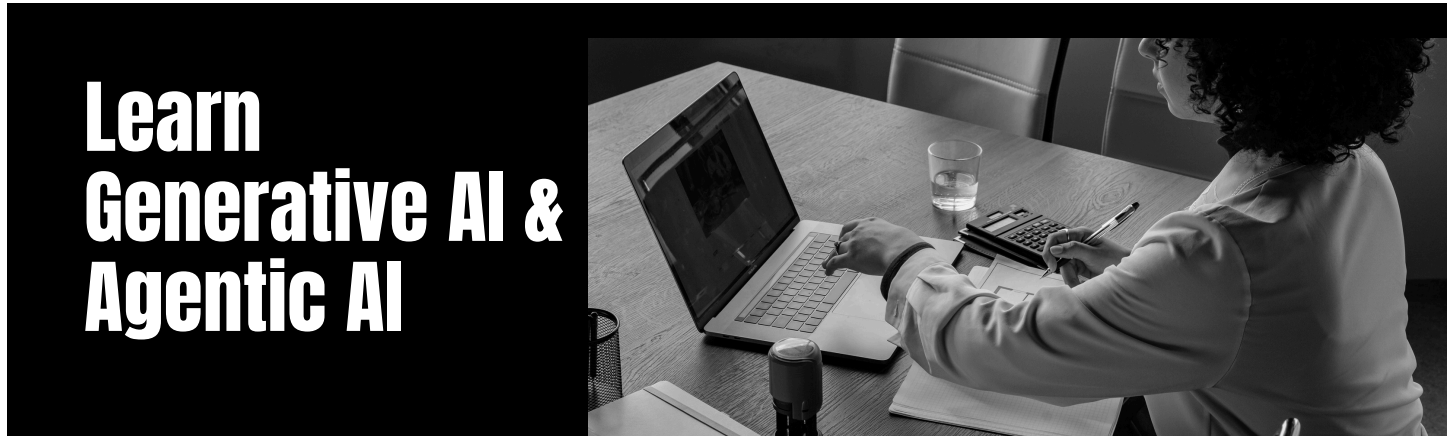
Natural language processing, or NLP, combines computational linguistics—rule-based modeling of human language—with statistical and machine learning models to enable computers and digital devices to recognize, understand and generate text and speech.

## **Detailed Syllabus:**

1. Introduction to NLP
2. End to End NLP Pipeline
3. Text Preprocessing Techniques
4. Text Representation Techniques
5. Word2Vec
6. CBOW
7. Skip-gram

## 8. NLP Projects

We'll dive into a variety of programs for every topic! ✨



Generative artificial intelligence (AI) is a type of AI that generates images, text, videos, and other media in response to inputted prompts.

# Detailed Syllabus:

## 1. Introduction to Generative AI

1. What is generative AI?
2. Why are generative models required?
3. Understanding generative models and their significance
4. Recent advancements and research in generative AI
5. Generative AI end-to-end project lifecycle
6. Key applications of generative models

## 2. Introduction to Large Language Models

1. Application and use cases of LLMs
2. Transfer learning in NLP
3. How to use pre-trained transformer-based models
4. How to perform finetuning of pre trained transformer-based models

## **3.Introduction to Hugging face and its applications**

1. Why the need for a hugging face?
2. Introduction of Hugging Face Transformers
3. Hugging face API key generation
4. Hugging Face Transfer learning models based on the state-of-the-art transformer architecture

## **4.Guide to Open AI and its Ready to Use Models with Application**

1. Introduction to OpenAI
2. What is OpenAI API and how to generate OpenAI API key?
3. Installation of OpenAI package
4. Experiment in the OpenAI playground
5. How to setup your local development environment
6. Different templates for prompting
7. OpenAI Models GPT-3.5 Turbo DALL-E 2, Whisper, Clip, Davinci and GPT-4 with practical implementation

## **5.Prompt Engineering Mastering with OpenAI**

1. Introduction to Prompt Engineering
2. Different templates for prompting
3. Prompt Engineering: What & Why?
4. Prompt Engineering & ChatGPT Custom Instructions
5. The Core Elements Of A Good Prompt
6. Which Context Should You Add?
7. Zero- One- & Few-Shot Prompting
8. Ask-Before-Answer Prompting
9. Perspective Prompting
10. Contextual Prompting
11. Emotional Prompting
12. Laddering Prompting
13. Using ChatGPT For Prompting
14. Find Out Which Information Is Missing
15. Self-evaluative Prompting

16. ChatGPT-powered Problem Splitting
17. Reversing Roles
18. More Prompts & Finding Prompt Inspirations
19. Super Prompts Like CAN & DAN

## **6.Vector database with Python for LLM Use Cases**

1. Introduction to vector database
2. Vector database foundation
3. Vector database use cases
4. Text embedding
5. Vector similarity search
6. Storing and retrieving vector data in SQLite
7. Chromadb local vector database part1 setup and data insertion
8. Query vector data
9. Fetch data by vector id
10. Database operation: create, update, retrieve, deletion, insert and update
11. Application in semantic search
12. Building AI chat agent with langchain and openai
13. Weviate Vector Database
14. Pinecone Vector Database

## **7.Hands-on with LangChain (Gen-AI)**

1. Introduction to LangChain
2. Prompts in LangChain
3. Models in LangChain
4. Structured Output in LangChain
5. Output Parsers in LangChain
6. Chains in LangChain
7. Runnables in LangChain
8. Document Loaders in LangChain
9. Retriever in LangChain
10. Tool Calling in LangChain
11. Retrieval-Augmented Generation (RAG) using Langchain components

# 8.Hands-on with LangGraph (Agentic-AI)

1. Introduction to LangGraph and AI Agents
2. Core Elements of LangGraph - state, nodes, edges
3. Building Your First AI Agent
4. Introducing Memory in AI Agents - Short-Term Memory, Memory Across Multiple Sessions
5. Advanced Routing and Customization of AI Agents- Conditional Routing, Streaming, External API Integrations
  - Weather API Integration: A Step-by-Step Example
  - Dynamic API Integration with User Input
  - Calculator API Integration
6. AI Agent Architectures - ReAct
  - 10 Examples of ReAct Agents in LangGraph
7. Human-in-the-Loop Agents, Incorporating Human Feedback for Smarter
  - Implementing Simple Breakpoints, Decision-Making- Breakpoints, Checkpoints, and State Editing
  - ReAct Agent Example with Financial Stock Purchase Use Case
  - ReAct Agent with Human Input
8. Plan-and-Execute Agents:
  - IT Troubleshooting and Diagnostics Agent
  - Practical Example 2. Business Workflow Automation Agent
  - Practical Example 3: Customer Support Chatbot
9. Agentic Retrieval-Augmented Generation (RAG) in LangGraph
10. Advanced RAG Architectures (Self-RAG, Corrective RAG and Adaptive RAG)
11. Multiagent Architectures
  - Agent Supervisor
  - Practical Example 1: A Research Assistant Network
  - Practical Example 2: Customer Service Automation
  - Practical Example 3: Stock Analysis
  - Practical Example 4: Portfolio Management
12. Hierarchical Agent Teams
13. Specialized Agent Architectures
  - Event-Driven Agents
  - Cognitive Architectures
  - Model-Based Agents
14. Testing AI Agents
15. Frontend Development for LangGraph-Powered AI Agents

16. Testing AI Agents with Test-Driven Development (TDD)

17. Deploying AI Agents into Production

## 9. End to End Projects (Industry Level Projects)

1. Project#1: RAG with END to END deployment
2. Project#2: Fine Tuning with END to END deployment
3. Project#3: Agentic AI with RAG with END to END deployment
4. Project#4: Multiagent Systems with END to END deployment

**LEARN MLOPS  
TOOLS**



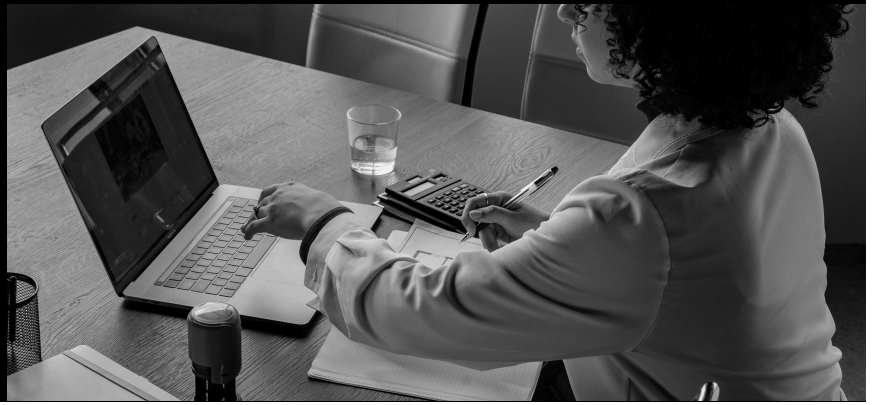
**LEARN AWS  
SERVICES**



**PRACTICE  
INTERVIEW  
QUESTIONS**



**RESUME  
BUILDING**



**NAUKRI,  
LinkedIn,  
GITHUB  
PROFILE BUILDING**



**MOCK  
INTERVIEWS**

