

Generative AI Internship Curriculum (6 Months + Major Project)

Month 1: Python & AI Foundations

Week 1–2: Python for AI

- Python Basics & Advanced Concepts
- OOP in Python
- Virtual Environments & Pipelines
- Working with APIs

Week 3–4: AI & ML Fundamentals

- What is AI, ML, DL & Generative AI
- Supervised vs Unsupervised Learning
- Neural Network Basics
- Math Essentials (Vectors, Probability – Basics)

Mini Task: Python-based AI Utilities

Month 2: Data Handling & ML Basics

Week 5–6: Data Processing

- NumPy & Pandas
- Data Cleaning & Feature Engineering
- EDA for AI Projects

Week 7–8: Machine Learning Essentials

- Regression & Classification Models
- Model Evaluation
- Overfitting & Regularization

Mini Project: ML Model for Prediction

Month 3: Deep Learning & NLP

Week 9–10: Deep Learning

- Neural Networks
- Backpropagation
- TensorFlow / PyTorch Basics

Week 11–12: NLP Fundamentals

- Text Preprocessing
- Tokenization
- Word Embeddings
- Language Modeling Basics

Mini Project: Text Classification System

Month 4: Generative AI & LLMs

Week 13–14: Generative Models

- Autoencoders
- GANs (Intro)
- Diffusion Models (Basics)

Week 15–16: Large Language Models

- Transformers Architecture
- Attention Mechanism
- Prompt Engineering
- OpenAI / Gemini / Hugging Face APIs

Mini Project: AI Chatbot using LLM API

Month 5: Advanced GenAI & Deployment

Week 17–18: Advanced LLM Concepts

- Fine-tuning LLMs (Intro)
- RAG (Retrieval-Augmented Generation)
- Vector Databases (FAISS, Pinecone)

Week 19–20: AI Application Development

- LangChain / LlamaIndex
- AI Agents Basics
- Model Deployment (FastAPI)
- Ethics & AI Safety

Mini Project: RAG-based Question Answering App

Month 6: Major Project & Career Skills

Week 21–22: Major Project Development

Major Project Options:

- Generative AI Chatbot
- AI Resume Analyzer
- AI Content Generator
- Code Assistant using LLMs
- AI-powered Search Engine

Features:

- Prompt Engineering
- RAG Pipeline
- API Integration
- Frontend + Backend

Week 23–24: Career Preparation

- Git & GitHub
- Resume & Portfolio Building
- Interview Preparation (GenAI)
- Mock Interviews
- AI Career Guidance

Tools & Technologies

- Python

- TensorFlow / PyTorch
- Hugging Face
- OpenAI / Gemini APIs
- LangChain / LlamaIndex
- FastAPI
- Vector Database

Internship Deliverables

- Weekly Assignments
- Mini Projects
- Major Project (Live)
- Internship Certificate
- Project Documentation

Final Outcome

- Strong Generative AI & LLM Skills
- Real-world AI Application Experience
- Industry-Ready Portfolio
- Interview & Job Confidence