Generative AI Internship Course Syllabus (45 / 90 / 180 Days) in the same style as your Data Science syllabus.

Program Highlights

45 Days – Foundation in Generative AI

Module 1: Introduction to Artificial Intelligence and Generative AI

- Introduction to AI, ML, Deep Learning, and Generative AI
- Evolution of Artificial Intelligence
- Applications of Generative AI across industries
- Understanding AI workflows and ecosystems
- Introduction to modern AI use cases

Module 2: Python Programming for AI

- Python syntax and programming fundamentals
- Variables, Data Types, Loops, Functions
- Object-Oriented Programming (OOP)
- Working with APIs and JSON
- File handling and data processing

Module 3: Data Handling and AI Foundations

- Data preprocessing basics
- Working with CSV and JSON datasets
- Data cleaning concepts
- Exploratory analysis for AI systems
- Preparing structured data for AI applications

Module 4: Prompt Engineering Fundamentals

- Introduction to Prompt Engineering
- Zero-shot Prompting
- Few-shot Prompting
- Chain-of-Thought Prompting
- Prompt optimization techniques

- Structured outputs and formatting

Module 5: Large Language Models (LLMs)

- Understanding LLM architecture
- Tokenization and embeddings
- Transformers overview
- Context windows and memory concepts
- Model limitations and optimization

Module 6: AI Tools and Productivity Platforms

- AI content generation tools
- Research assistants
- AI coding assistants
- AI-powered document creation
- Workflow productivity automation

Module 7: AI Application Development

- Building AI chatbots
- Creating document assistants
- AI-powered recommendation systems
- Content generation applications
- Introduction to deployment

Module 8: Real-Life Projects

- AI Chatbot
- Resume Generator
- AI Content Generator
- Document Analyzer
- AI Assistant Mini Project

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90 Days – Intermediate Generative AI Engineering

Includes all 45-day modules plus:

Module 9: Advanced Prompt Engineering

- Multi-step prompting
- Prompt chaining
- Role-based prompting
- Dynamic prompts
- Prompt templates and optimization

Module 10: Retrieval-Augmented Generation (RAG)

- Understanding Retrieval Systems
- Embeddings and Vector Search
- Knowledge Base Construction
- Document Retrieval
- Context Management

Module 11: Generative AI Frameworks

- AI workflow architecture
- AI application structure
- Orchestration concepts
- Modular AI design
- AI pipelines

Module 12: AI Automation and Workflow Development

- Workflow automation fundamentals
- Intelligent task execution
- AI integrations
- Event-driven automation
- AI process optimization

Module 13: Fine-Tuning and Model Optimization

- Model customization concepts
- Fine-tuning fundamentals
- Performance measurement

- Hyperparameter understanding
- Optimization techniques

Module 14: Deployment and Production Systems

- Deploying AI applications
- Hosting fundamentals
- Performance monitoring
- API deployment
- Scalability concepts

Module 15: Real-Life Projects and Case Studies

- AI Customer Support System
- AI Learning Assistant
- AI Automation Platform
- AI Knowledge System
- Business Case Study Implementation

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180 Days – Master Generative AI Engineering

Includes all 90-day modules plus:

Module 16: Advanced Large Language Model Development

- Advanced transformer concepts
- LLM optimization
- Context engineering
- Model architecture understanding
- Scalable AI design

Module 17: Multimodal AI Systems

- Text + Image Processing
- Document Understanding
- Audio and Speech Integration
- Visual AI Applications

- Unified AI systems

Module 18: AI Agents and Autonomous Systems

- AI Agent Architecture
- Multi-agent systems
- Autonomous workflows
- Decision-making systems
- Agent collaboration concepts

Module 19: AI Security and Responsible AI

- AI Ethics
- Responsible AI principles
- Privacy and Governance
- Bias reduction
- AI security practices

Module 20: Cloud Deployment and Scalability

- Cloud fundamentals
- Hosting AI applications
- Infrastructure basics
- Scaling AI systems
- Monitoring production workloads

Module 21: AI Product Development

- AI product lifecycle
- Market validation
- Product planning
- User experience for AI
- AI business applications

Module 22: Enterprise AI Solutions

- Enterprise architecture
- AI integration strategy

- AI adoption models
- Business automation
- Production environments

Module 23: Capstone Projects

Students will build complete projects:

- Intelligent AI Assistant
- AI Resume Builder
- AI Content Generator
- AI Knowledge Retrieval System
- AI Workflow Automation Platform
- AI Business Solution