Artificial Intelligence Course Syllabus

Total Duration: 90hrs

Module 1

Chapter 1: Introduction to Artificial Intelligence

1. What is Artificial Intelligence?
2. Types of Artificial Intelligence
3. Applications of AI
4. Challenges in AI Development
5. The Future of Artificial Intelligence

Chapter 2: History and Evolution of Artificial Intelligence

1. Early Foundations of AI
2. The Birth of Artificial Intelligence
3. The Era of Optimism (1950s–1970s)
4. The AI Winters
5. The Resurgence of AI (1990s–2000s)
6. Modern AI Era (2010s–Present)
7. Key Factors Driving AI Evolution
8. Challenges During AI Evolution
9. Lessons Learned from AI's History
10. The Road Ahead for AI

Chapter 3: Understanding Machine Learning

1. What is Machine Learning?
2. Types of Machine Learning
3. Key Concepts in Machine Learning
4. Steps in the Machine Learning Workflow
5. Applications of Machine Learning
6. Challenges in Machine Learning
7. Future Trends in Machine Learning

Chapter 4: Supervised vs. Unsupervised Learning

1. Introduction to Supervised Learning

2. Introduction to Unsupervised Learning

3. Key Differences Between Supervised and Unsupervised Learning

4. Real-World Applications

5. Challenges in Both Approaches

6. Combining Supervised and Unsupervised Learning

Chapter 5: Introduction to Deep Learning

1. Understanding Deep Learning

2. Neural Network Structure

3. Training Neural Networks

4. Types of Neural Networks

5. Applications of Deep Learning

6. Challenges in Deep Learning

7. Tools and Frameworks for Deep Learning

Chapter 6: Neural Networks - Concepts and Applications

1. What Are Neural Networks?

2. Mathematics of Neural Networks

3. Types of Neural Networks

4. Applications of Neural Networks

5. Challenges in Neural Networks

6. Future Directions

Chapter 7: Working with AI Libraries - TensorFlow and PyTorch

1. Introduction to AI Frameworks

2. TensorFlow

3. PyTorch

4. Comparison: TensorFlow vs. PyTorch

5. Applications of TensorFlow and PyTorch

6. Challenges in Using AI Frameworks

7. Future Directions

Chapter 8: Natural Language Processing (NLP) Basics

1. What is Natural Language Processing (NLP)?

2. Components of NLP

3. Techniques in NLP

4. Tools and Libraries in NLP

5. Applications of NLP

6. Challenges in NLP

7. Future Directions

Chapter 9: Computer Vision and Image Recognition

1. What is Computer Vision?

2. Key Concepts in Computer Vision

3. Techniques in Computer Vision

4. Tools and Libraries for Computer Vision

5. Applications of Computer Vision

6. Challenges in Computer Vision

7. Future Directions

Chapter 10: Reinforcement Learning Concepts

1. What is Reinforcement Learning?

2. Mathematical Framework of Reinforcement Learning

3. Key Algorithms in Reinforcement Learning

4. Applications of Reinforcement Learning

5. Challenges in Reinforcement Learning

6. Future Directions

7. Use Case: Influencer Marketing Strategy for an Online Fashion Store

Module 2

Chapter 11: AI in Robotics

1. What is AI in Robotics?
2. Components of AI in Robotics
3. AI Algorithms in Robotics
4. Applications of AI in Robotics
5. Challenges in AI Robotics
6. Future Directions

Chapter 12: Ethics and Bias in AI

1. Understanding Ethics in AI
2. Understanding Bias in AI
3. Strategies to Mitigate Bias in AI
4. Ethical Concerns in AI Applications
5. Societal Impact of AI Ethics
6. Future Directions in Ethical AI

Chapter 13: Building Chatbots and Virtual Assistants

1. What Are Chatbots and Virtual Assistants?
2. Key Components of Chatbots and Virtual Assistants
3. Building Chatbots: Step-by-Step Guide
4. Advanced Features of Virtual Assistants
5. Applications of Chatbots and Virtual Assistants
6. Challenges in Building Chatbots and Virtual Assistants
7. Future Directions in Chatbots and Virtual Assistants

Chapter 14: AI in Business - Use Cases and Applications

1. Role of AI in Business

2. Applications of AI in Business

3. Implementation Strategies for AI in Business

4. Challenges of AI Adoption in Business

5. Future Directions for AI in Business

Chapter 15: Introduction to AI Model Deployment

1. What is AI Model Deployment?

2. Key Concepts in AI Model Deployment

3. Steps in AI Model Deployment

4. Tools and Frameworks for Model Deployment

5. Challenges in AI Model Deployment

6. Best Practices for AI Model Deployment

7. Future Directions in AI Model Deployment

Chapter 16: AI for Data Analytics

1. What is AI for Data Analytics?

2. Core Components of AI-Driven Data Analytics

3. Techniques in AI-Driven Data Analytics

4. Tools and Platforms for AI-Driven Data Analytics

5. Applications of AI in Data Analytics

6. Challenges in AI for Data Analytics

7. Future Trends in AI-Driven Data Analytics

Chapter 17: Advanced Topics: GANs and RNNs

1. Generative Adversarial Networks (GANs)

2. Recurrent Neural Networks (RNNs)

3. GANs vs. RNNs

4. Future Trends in GANs and RNNs

Chapter 18: AI in Healthcare and Autonomous Vehicles

1. AI in Healthcare

2. AI in Autonomous Vehicles

Chapter 19: AI Tools and Platforms Overview

1. Importance of AI Tools and Platforms

2. Categories of AI Tools and Platforms

3. Key Challenges in Using AI Tools and Platforms

4. Future Trends in AI Tools and Platforms