Artificial Intelligence

Introduction to Artificial Intelligence	What is Artificial Intelligence? History and Evolution of AI AI Applications and Impact Ethics and Responsible AI
Machine Learning Fundamentals	Introduction to Machine Learning Supervised, Unsupervised, and Reinforcement Learning Data Preprocessing and Feature Engineering Model Selection and Evaluation Overfitting and Underfitting
Deep Learning	Neural Networks and Perceptrons Convolutional Neural Networks (CNNs) Recurrent Neural Networks (RNNs) Generative Adversarial Networks (GANs) Transfer Learning and Pretrained Models
Natural Language Processing (NLP)	Text Preprocessing and Tokenization Word Embeddings (Word2Vec, GloVe) Sequence-to-Sequence Models Attention Mechanisms Language Models (BERT, GPT)
Computer Vision and Image Processing	Image Preprocessing and Augmentation Object Detection and Image Classification Image Segmentation Image Generation and Style Transfer
Reinforcement Learning	Introduction to Reinforcement Learning Markov Decision Processes (MDPs) Q-Learning and Policy Gradient Methods Deep Reinforcement Learning
AI Ethics and Bias	Fairness, Accountability, and Transparency in AI (FAT/ML) Ethical Considerations in AI Development Bias and Discrimination in AI AI Regulation and Governance
AI Tools and Frameworks	Popular AI Libraries and Frameworks (e.g., TensorFlow, PyTorch) Development Environments (e.g., Jupyter, Google Colab)

	AI in the Cloud (e.g., AWS, Azure, GCP)
AI in Practice	Industry Use Cases and Case Studies AI Project Management and Deployment Model Monitoring and Maintenance Real-world Challenges and Best Practice
Future Trends and Advanced Topics	AI in Healthcare AI in Autonomous Systems (Self-driving Cars, Drones) AI in Finance and Stock Market Prediction Quantum Computing and AI
Capstone Project	Students work on a substantial AI project, applying concepts learned throughout the course.