

Week	Topics (Theory)	Topics (Practice)	Notes
Months 1-2 (Fundamentals)			
1-2	Introduction to AI and ML, History, Applications	Python Programming Basics (Data Types, Variables, Operators, Control Flow)	Ensure students have basic programming knowledge or provide preparatory resources.
3-4	Linear Algebra & Calculus Basics	Coding Exercises in Python (Data Manipulation, Visualization)	Focus on practical application and clear explanations.
5-6	Probability & Statistics Basics	Simple AI Problems (Tic-Tac-Toe, Number Guessing)	Introduce core statistical concepts through hands-on exercises.
7-8	Introduction to Data Analysis Libraries (Pandas, NumPy)	Data Analysis Practices with Real-world Datasets	Emphasize data cleaning, exploration, and visualization techniques.
Months 3-4 (Machine Learning)			
9-10	Supervised Learning Algorithms (Linear Regression, Decision Trees, KNN)	Implement Supervised Learning Algorithms in scikit-learn	Provide clear explanations of algorithms and hyperparameter tuning.
11-12	Unsupervised Learning Algorithms (k-means Clustering, PCA)	Analyse Real-world Datasets & Build Predictive Models	Encourage experimentation with different algorithms and evaluation metrics.
13-14	Model Selection & Evaluation Techniques	Evaluate Model Performance (Accuracy, Precision, Recall)	Focus on understanding the strengths and limitations of different metrics.
15-16	Introduction to Deep Learning (Basic Concepts)	Simple Neural Network Projects (Image Recognition, Text Classification)	Introduce core deep learning concepts through practical applications.

Months 5-6 (Advanced Topics & Projects)			
17-18	Deep Learning Architectures (CNNs, RNNs)	Build Deep Learning Projects for Image/Text/Time Series Data	Consider incorporating external libraries/frameworks like TensorFlow or PyTorch.
19-20	Natural Language Processing (NLP) Basics (Text Representation, Sentiment Analysis)	Explore NLP Techniques through Real-world Applications	Focus on practical applications like sentiment analysis or chatbot development.
21-22	Reinforcement Learning Concepts (Q-learning, Policy Gradients)	Implement Simple Reinforcement Learning Games/Simulations	Introduce basic concepts through interactive simulations or game environments.
23-24	Ethical Considerations in AI and ML	Group Project: Apply Learned Concepts to Solve a Real-world Problem	Emphasize responsible development, bias mitigation, and societal impact.
25-26	Course Review & Career Guidance	Project Presentations & Q&A	Address student questions, provide feedback, and offer career guidance.