

Course Name: CS-272, **Artificial Intelligence**

Credit Hours: 2-1

Contact Hours: 2-3

Pre-requisites: None

Course Introduction:

In the "Artificial Intelligence" course, students will commence by grasping the foundational concepts and techniques of AI, including key principles and algorithms in machine learning. They will then progress to implementing and assessing machine learning models, demonstrating their ability to practically utilize these AI concepts. Moving forward, students will acquire the skills to implement and train deep learning models for diverse applications, showcasing their practical expertise in advanced AI methods. Additionally, they will learn to apply data pre-processing, feature extraction, and model evaluation techniques to address real-world problems. Throughout the course, students will actively develop critical thinking, problem-solving, and communication skills by engaging in project-based learning, fostering their capacity to create innovative solutions in the field of AI.

CLO No	Course Learning Outcomes	Bloom Taxonomy
CLO-1	Understand the fundamental concepts and techniques of Artificial Intelligence including key concepts and algorithms in machine learning	C1 (Knowledge)
CLO-2	Implement and evaluate machine learning models	C3 (Apply)
CLO-3	Implement and train deep learning models for various applications	C3 (Apply)
CLO-4	Apply data pre-processing, feature extraction, and model evaluation to real-world problems	C3 (Apply)
CLO-5	Develop critical thinking, problem-solving, and communication skills through projects	C6 (Create)

Course Plan:

#	Weekly Distribution of Course Contents
Week-1	Introduction to Artificial Intelligence, Applications of AI in various domains
Week-2	Ethics and social implications of AI
Week-3	AI techniques and methods

Week-4	Overview of programming languages and platforms for AI
Week-5	Basic mathematical concepts for AI
Week-6	Introduction to Machine Learning (Supervised learning, Unsupervised learning)
Week-7	Introduction to Machine Learning (Reinforcement learning, Deep learning)
Week-8	AI Programming Tools and Libraries
Week-9	Python programming for AI
Week-10	Data preparation and pre-processing
Week-11	Model selection and evaluation
Week-12	Analysis and interpretation of results
Week-13	Applications of AI (Natural language processing and text analysis)
Week-14	Applications of AI (Computer vision and image analysis, Robotics and control systems)
Week-15	Emerging Trends and Future Directions in AI (healthcare and biomedicine, autonomous systems)
Week-16	Emerging Trends and Future Directions in AI (self-driving cars, financial and economic analysis, etc)

Reference Materials:

1. Artificial Intelligence with Python, by Prateek Joshi (2017)
2. Machine Learning: A Probabilistic Perspective, Kevin P. Murphy, MIT Press, (2012).