
Title**CIS 7 Introduction to Artificial Intelligence**

Course Description

This course provides a foundational overview of artificial intelligence (AI) by exploring core concepts such as search algorithms and knowledge representation that are used by modern intelligent systems. Through hands-on projects such as fraud detection and machine translation, students gain experience in predictive analytics, uncertainty management, optimization, and other AI practices.

CSLOs

- Discuss artificial intelligence (AI) basic concepts and explain the fundamental concepts of AI applications.
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Course Outline**A. Define Artificial Intelligence (AI)**

1. History and related fields
2. Philosophy of AI
3. Problem solving with AI

B. Describe Modern AI Principles

1. AI principles and learning process: symbolic AI, connectionist AI, machine learning, embodied AI, search and heuristics, hybrid AI
2. Black box modeling
3. Evaluation of models and uncertainty

C. Describe Machine Learning (ML) Models

1. Data science workflow
2. Data pipeline: wrangling, exploration, training, testing
3. Types of machine learning
 - Supervised learning
 - Unsupervised learning

D. Describe Artificial Intelligence (AI) Models

1. Reinforcement learning
2. Neural network and deep learning
3. Transfer learning

4. Generative models
5. Adversarial models
6. Artificial general intelligence

E. Apply Generative AI Systems

1. Text generation
2. Chat generation
3. Image generation
4. Audio and video generation
5. Code generation

F. Discuss Hardware for AI

1. Data centers and gateways
2. Processors
3. Sustainability

G. Evaluate Ethics in AI

1. Data
 - Bias and fairness
 - Copyrights and fair use
 2. Implications of AI in society
 - Benefits
 - Risks
 3. Privacy in AI
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Prerequisite(s)

None