



Course Description

CAI1001C | Artificial Intelligence (AI) Thinking | 3.00 credits

A survey of artificial intelligence (AI) where students explore different technologies utilizing concepts and skills widely accepted for AI and digital competency. Classification algorithms, supervised vs. unsupervised learning, data preparation, and training/using learning models for predictions are presented. CGS1060C and MAT1033 are recommended but not required.

Competency 1: Student will examine the field of AI and machine learning by:

1. Describing Digital Literacy, Practical Functional Digital Skill, Digital Collaboration, Curating Information, and Data Sources – Internet of Things
2. Describing the history of AI
3. Describing and using the AI project cycle
4. Identifying supervised vs. unsupervised learning, neural networks and discovering their application
5. Researching enterprise applications of AI and implementation readiness such as computing scalability, technical tradeoffs, and data pipelines.

Competency 2: The student will demonstrate an understanding of ethical and legal considerations in AI by:

1. Defining key vocabulary terms related to computing ethics such as algorithmic privacy and algorithmic fairness
2. Identifying and explaining issues in computing ethics at the levels of system development, implementation, and administration

Competency 3: The student will explore data sets by:

1. Defining and describing data, data acquisition, data visualization, and data transformation.
2. Identifying data sources and their production
3. Using and manipulating data sets to train learning models

Competency 4: The student will explore machine- learning algorithms for classification by:

1. Describing classification algorithms including linear classifiers, support vector machines, quadratic classifiers, kernel estimation (k-nearest neighbor), decision trees, and neural networks
2. Reproducing linear classifiers, support vector machines, k-nearest neighbor, and neural net learning models using Python

Competency 5: The student will examine computer vision and facial recognition by:

1. Explaining computer vision and facial recognition, image segmentation, object and motion detection and object classification

Competency 6: The student will examine Natural Language Processing by:

1. Defining and explaining machine translation, sentiment analysis, application of deep learning to NLP, speech recognition, and synthesis
2. Reproducing Chatbots using Python

Competency 7: The student will examine Robotic Sensing and Manipulation by:

1. Defining and explaining robotics, sensing and manipulation, human-robot interaction, navigation and path planning, reinforcement learning, and autonomous vehicles technologies and impacts

Learning Outcomes:

- Use quantitative analytical skills to evaluate and process numerical data

Updated: Fall 2025

- Solve problems using critical and creative thinking and scientific reasoning
- Demonstrate knowledge of ethical thinking and its application to issues in society
- Use computer and emerging technologies effectively