

Artificial Intelligence Courses

Courses

AI 3311. Fairness and Safety in AI.

The broader impacts of deploying artificial intelligence on individuals and on society. Ways to identify, avoid, or mitigate negative outcomes, and to maximize its value.

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of ARIN

Prerequisite(s): (CS 2302 w/C or better) OR (CS 2401 w/B or better)

AI 3312. Data Integration-Processing.

This course will cover data storage and retrieval for relational and non-relational databases. Topics include data quality and data integration for AI-driven tools and methods, e.g., data cleaning, normalization, reconciliation, and data workflows.

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of ARIN

Prerequisite(s): (CS 2401 w/C or better)

AI 4310. Human-Machine Intelligence I.

Methodologies, approaches, and techniques associated with software requirements analysis and definition; process for defining requirements of a system including feasibility study, requirements elicitation, formal specification, modeling, validation, verification, and documentation; other topics include cooperative teamwork and project management; first semester of a two-semester capstone project in which students work with a customer to capture and specify requirements for a real-world Artificial Intelligence-based application.

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of ARIN

Classification Restrictions:

Restricted to class of SR

Prerequisite(s): (CS 3331 w/C or better)

AI 4311. Human-Machine Intelligence II.

Methodologies, approaches, and techniques associated with software design, implementation, and testing of a software system; other topics include cooperative teamwork, project management, and documentation; second semester of a two-semester capstone project in which students design and implement a real-world Artificial Intelligence-based application.

3 Credit Hours**3 Total Contact Hours**

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of ARIN

Classification Restrictions:

Restricted to class of SR

Prerequisite(s): (AI 4310 w/C or better)

AI 4319. Speech/Language Processing.

A survey and sampling of the techniques and issues in speech and language processing. Students will design, implement, and evaluate a project applying what they learn to a problem of their choosing.

3 Credit Hours**3 Total Contact Hours**

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of ARIN

Prerequisite(s): (CS 2302 w/C or better AND MATH 3323 w/C or better AND STAT 3320 w/C or better)

AI 4320. Artificial Intelligence.

Artificial intelligence is the study of how machines can be designed to think and perform rational, goal-oriented actions. This course will introduce students to some of the most fundamental concepts and techniques in artificial intelligence, as well as some of the philosophical and historical aspects of artificial intelligence. The topics we will cover include search (uninformed and heuristic), genetic algorithms, constraint satisfaction, decision theory, reasoning under uncertainty, game theory, and machine learning.

3 Credit Hours**3 Total Contact Hours**

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of ARIN

Prerequisite(s): (CS 2302 w/C or better)

AI 4361. Machine Learning.

The course will provide introduction to machine learning concepts and algorithms. Specific topics include data pre-processing, feature selection, model evaluation, instance-based learning, linear regression, decision trees, support vector machines, ensemble methods, clustering, and artificial neural networks.

3 Credit Hours**3 Total Contact Hours**

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of ARIN

Prerequisite(s): (CS 2302 w/C or better)

AI 4362. Data Mining.

Introduction to data mining algorithms and concepts. Specific topics include (1) understanding the basic concepts relevant to data, features, dimensionality and proximity - similarity and distance, (2) supervised and unsupervised learning algorithms, (3) pattern mining, (4) ranking (page rank algorithm), (5) mathematical optimization for mining data, and (6) outlier detection.

3 Credit Hours**3 Total Contact Hours**

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of ARIN

Prerequisite(s): (CS 2302 w/C or better)

AI 4363. Computer Vision.

Introduction to computer vision including: the image formation process, image transformations, camera imaging geometry, feature creation detection and matching, image segmentation, stereo reconstruction, object tracking, and object recognition.

3 Credit Hours**3 Total Contact Hours**

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of ARIN

Prerequisite(s): (CS 2302 w/C or better)

AI 4366. Deep Learning.

Deep learning is the sub-field of machine learning that deals with learning complex, hierarchical feature representations from data using artificial neural networks. The course covers the basic building blocks of neural networks - including dense, convolutional, pooling, and attention layers, activation functions, model optimization algorithms, loss functions, regularization techniques and common architectures - including sequential, recurrent, residual, and transformers.

3 Credit Hours**3 Total Contact Hours**

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of ARIN

Prerequisite(s): (CS 4361 w/C or better) OR (AI 4361 w/C or better)

AI 4373. AI Internship.

A professional internship in an industrial, governmental, or other organization in which a student engages in authentic workplace experiences. To receive a passing grade, the student must submit a written report from the internship supervisor to the undergraduate program director that presents the results of the internship, including a description of applied and acquired skills.

3 Credit Hours**3 Total Contact Hours**

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of ARIN

Prerequisite(s): (CS 3331 w/C or better)

AI 4390. Special Topics in AI.

Selected topics of current interest in Artificial Intelligence. May be repeated for credit when topic varies.

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of ARIN

Classification Restrictions:

Restricted to class of SR