<center>COURSE DESCRIPTION</center>

Dept., Number	CS 4320 **Selected Elective**	Course Title	Artificial Intelligence
Semester hours	45 hours	Course Coordinator	Christopher Kiekintveld

Current Catalog Description

Introduction to basic concepts and techniques of artificial intelligence including knowledge representation, search strategies, symbolic logic, expert systems, and applications.

Textbook:

Russell, S. and P. Norvig. *Artificial Intelligence: A Modern Approach (3rd edition).*

Course Outcomes:

Level 1: Knowledge and Comprehension
1a) Understand the basic concepts of agents, rationality, and intelligent behavior, including the major challenges of designing and evaluating artificial agents.
1b) Be familiar with the history of AI and have some understanding of current research and practice.
1c) Recognize and define terminology for all of the covered subareas of AI.
1d) Familiarity with basic logic and how it can be used to design agents.
1e) Understanding of probability and utility theory.
1f) Principles of decision theory and value of information.
1g) Formulations of sequential decisions (MDPs)
1h) Fundamental concepts of machine learning in MDPs
1i) Basic game theory concepts and terminology

Level 2: Application and Analysis
2a) Formulate problems as search problems, and apply appropriate search algorithms to solve the problems (e.g., breath-first, depth-first, iterative deepening, minimax, genetic algorithms)
2b) Formulate and solve constraint satisfaction problems using basic CSP methods.
2c) Use basic logical inference methods.
2d) Apply probabilistic reasoning and decision theoretic analysis to simple decision problems.
2e) Use value iteration and basic reinforcement learning methods to solve MDPs.
2f) Solve simple game theory problems using Nash equilibrium or other solution concepts.

Level 3: Synthesis and Evaluation
3a) Understand the differences and advantages of different types of search methods, including uninformed, heuristic, and local search techniques.
3b) Understand the use and importance of heuristics in solving complex problems.
3c) Know the major challenges of designing intelligent agents, and understand how the methods and algorithms introduced in class related to these challenges, and what the limitations of the methods are.

Student Outcomes:

N/A

Prerequisites by Topic:
CS 2302 with a grade of "C" or better.