Course Information for CSCI 377

Course Number: CSCI 377
Title: Artificial Intelligence
Instructor: Mark Hopkins
Day & Time: MWF 1215-105pm (Section 1), MWF 135-225pm (Section 2), MWF 310-4pm (Section 3)
Room(s): Performing Arts 320 (Sections 1 and 2), Online (Section 3)

Instructor Information
Office: Library 382
Office Hours: M 10-1130pm, WF 4-5pm
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Course Description
An introduction to the construction of software systems that emulate intelligent behavior. Topics include knowledge representation, reasoning under uncertainty, logic, planning, and algorithmic strategies for large-scale combinatorial search. Students will explore these topics with a series of implementation projects. Prerequisite: Computer Science 382.

Learning Outcomes
After successful completion of the course, a student should:
1. Understand introductory concepts in AI logic, as demonstrated by the following skills:
    a. Express logical statements using propositional and first-order logic, and understand the ontological difference between propositional and first-order logics.
    b. Apply and analyze logical inference algorithms, such as resolution and forward/backward chaining
2. Understand introductory concepts in AI search, as demonstrated by the following skills:
    a. Implement and analyze uninformed search strategies such as BFS, DFS, and depth-limited search, and bidirectional search
    b. Implement heuristics in informed search strategies, as well as identify the aspects of a good heuristic
    c. Implement and analyze simple game search algorithms, e.g. minimax and alpha-beta pruning
3. Understand introductory concepts in probabilistic models and reinforcement learning, as demonstrated by the following skills:
    a. Construct probabilistic models of uncertainty and compute/understand associated concepts like d-separation.
    b. Implement a reinforcement learning engine for a simple scenario, like learning to play blackjack.

Distribution Requirements
This course can be used towards your Group III, "Natural, Mathematical, and Psychological Science," requirement. It accomplishes the following learning goals for the group (indicate as appropriate):
- Use and evaluate quantitative data or modeling, or use logical/mathematical reasoning to evaluate, test or prove statements

This course **does not** satisfy the "primary data collection and analysis" requirement.