**Course Information Sheet**

**CSCI 4550**  
**Artificial Intelligence**

**Brief Course Description**  
(50-words or less)  
An introduction to the fundamental concepts in computer science, including algorithms and logic, and the theoretical foundations in philosophy that define the field of artificial intelligence.

**Extended Course Description / Comments**  
This course is cross-listed with PHIL 4550 and is a 3-credit hour course.

**Pre-Requisites and/or Co-Requisites**  
CSCI 2610: Discrete Mathematics for Computer Science  
Or PHIL 2500: Symbolic Logic

**Required, Elective or Selected Elective**  
Selected Elective Course

**Approved Textbooks**  
(if more than one listed, the textbook used is up to the instructor’s discretion)  
Author(s): Stuart Russell and Peter Norvig  
Title: *AI: A Modern Approach*  
Edition: 3rd  

**Specific Learning Outcomes**  
(Performance Indicators)  
This course presents a survey of topics in artificial intelligence most relevant to students studying computer engineering. At the end of the semester, all students will be able to do the following:  
1. Represent the environments of decision making problems including their observability, determinism, continuousness, and other criteria  
2. Identify and compare agent types, such as reflex, goal-based, and utility-based  
3. Implement uninformed search strategies such as BFS, DFS, depth- limited search, and bidirectional search  
4. Implement heuristics in informed search strategies, as well as identify the aspects of a good heuristic  
5. Evaluate the effectiveness of local search algorithms, including hill-climbing, simulated annealing, and beam searches  
6. Evaluate competitive game outcomes by using minimax algorithms, alpha-beta pruning, and evaluation functions  
7. Utilize basic inferencing rules in propositional logic, such as resolution and forward/backward chaining  
8. Express propositional statements using quantifiers and functions in First-Order logic  
9. Implement Java or written algorithms that evaluate goal-oriented problems using propositional or first-order propositional logic  
10. Represent knowledge using constructs such as Ontologies
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**Major Topics Covered**  
(Approximate Course Hours)

3 credit hours = 37.5 contact hours  
4 credit hours = 50 contact hours  
Note: Exams count as a major topic covered

- Intelligent Agent Design (4-hours)
- Uninformed Search (3.5-hours)
- Informed Search (3.5-hours)
- Adversarial Search (3.5-hours)
- Propositional Logic Syntax (3-hours)
- Knowledge-Based Agents (1-hour)
- Inferencing Rules in Prop. Logic (2-hours)
- First-Order Propositional Logic Syntax (3-hours)
- Inferencing with Quantifiers (1-hour)
- Forward and Backward Chaining (2-hours)
- Knowledge Representation (5-hours)
- Classical Planning (1.5-hours)
- Exams (4.5-hours)

**Course Master**  
Dr. Khaled Rasheed