

# Coordinator Assessment Tool For CSC 462 Artificial Intelligence

Approved On: 8/21/2003 Curriculum Committee Review Recommended? **y n**

**Course Description:** This course provides an overview of the field of artificial intelligence. Emphasis is on the basic tools of AI - search and knowledge representation - and their application to a variety of AI problems. Search methods to be discussed include depth-first, breadth-first, and A\* algorithms; knowledge representation schemes include propositional and predicate logics, semantic nets and frames, and scripts. Planning using a STRIPS-like planner will also be addressed. Areas of AI that may be addressed include natural language processing, computer vision, robotics, expert systems, and machine learning.

**Pre-requisites:** CSC 210

## Learning Objective

## Degree Objective Met

	Unmet		All Met		
	1	2	3	4	5
- Compare and contrast various knowledge representation schemes, including predicate logic, semantic nets, frames, and scripts					

Assessment Sources:

- Create operators for moving between states for a given problem.					
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Assessment Sources:

- Identify 5 areas of AI, such as natural language processing, computer vision, robotics, expert systems, and machine learning.					
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Assessment Sources:

- Differentiate among various definitions of intelligence, and the types of problems that AI deals with					
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Assessment Sources:

- Be able to describe a specified set of classic AI problems (e.g., 8-queens problem, cannibals and missionaries, etc.).					
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Assessment Sources:

- Write simple programs using a language specifically intended for AI (e.g., Lisp, PROLOG, ML).					
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Assessment Sources:

- Implement breadth-first and depth-first search					
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Assessment Sources:

- Explicitly represent a state space for a given problem.

1 2 3 4 5

Assessment Sources:

- Apply STRIPS-like planner to a problem.

1 2 3 4 5

Assessment Sources:

- Compare and contrast explicit and implicit representations of state spaces with respect to practical issues of search.

1 2 3 4 5

Assessment Sources:

- Differentiate between forward and backwards search, and identify problem characteristics appropriate to each.

1 2 3 4 5

Assessment Sources:

- Define heuristic, and apply several heuristic-based search techniques to a problem. These techniques will include A\*, and may also include hill-climbing, best-first, simulated annealing, etc.

1 2 3 4 5

Assessment Sources:

- Use minimax search with alpha-beta pruning for searching a game space

1 2 3 4 5

Assessment Sources:

- Represent AI problems using predicate logic, rules, semantic nets, frames, scripts as appropriate.

1 2 3 4 5

Assessment Sources:

- Compare and contrast depth-first and breadth-first techniques

1 2 3 4 5

Assessment Sources:

- Explain problems and techniques associated with specific selected AI areas (vision, learning, ...), and how each involves search and knowledge representation

1 2 3 4 5

Assessment Sources:

- Explain the advantages of predicate over propositional logic for representing AI problems

1 2 3 4 5

Assessment Sources: