Course Information Sheet
CSCI 4550
Artificial Intelligence

The University of Georgia
Department of Computer Science

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

Approved Textbooks
(If more than one, course text used during a semester is at the discretion of the instructor)

Author(s): Stuart Russell and Peter Norvig
Title: AI: A Modern Approach
Edition: 3rd
ISBN-13: 978-0136042594

Specific Learning Outcomes
(Performance Indicators)

This course presents a survey of topics in artificial intellgience 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. Indentify 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

Relationship Between Student Outcomes and Learning Outcomes

		a	b	c	d	e	f	g	h	i	j	k
	Student Outcomes											
Learning Outcomes	1			•							•	
	2			•						•	•	
	3	•	•							•	•	•
	4	•	•	•							•	•
	5			•							•	

	a	b	c	d	e	f	g	h	i	j	k
6		•									
7	•										
8	•		•								
9	•							•	•	•	•
10			•				•		•		

Student Outcomes

a. An ability to apply knowledge of computing and mathematics appropriate to the discipline.

b. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.

c. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.

d. An ability to function effectively on teams to accomplish a common goal.

e. An understanding of professional, ethical, legal, security and social issues and responsibilities.

f. An ability to communicate effectively with a range of audiences.

g. An ability to analyze the local and global impact of computing on individuals, organizations, and society.

h. Recognition of the need for and an ability to engage in continuing professional development.

i. An ability to use current techniques, skills, and tools necessary for computing practice.

j. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.

k. An ability to apply design and development principles in the construction of software systems of varying complexity.

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)

Assessment Plan for this Course

Each time this course is offered, the class is initially informed of the Course Outcomes listed in this document, and they are included in the syllabus. At the end of the semester, an anonymous survey is administered to the class where each student is asked to rate how well the outcome was achieved. The choices provided use a 5-point Likert scale containing the following options: Strongly agree, Agree, Neither agree or disagree, disagree, and strongly disagree. The results of the anonymous survey are tabulated and results returned to the instructor of the course.

The course instructor takes the results of the survey, combined with sample student responses to homework and final exam questions corresponding to course outcomes, and reports these results to the ABET committee. If necessary, the instructor also writes a recommendation to the ABET committee for better achieving the course outcomes the next time the course is offered.

How Data is Used to Assess Program Outcomes

Each course Learning Outcome, listed above, directly supports one or more of the Student Outcomes, as is listed in "Relationships between Learning Outcomes and Student Outcomes". For CSCI 4550, Student Outcomes (c) and (j) are predominantly supported.

Course Master
Course History

Dr. Prashant Doshi
05/2008   Course Approved in CAPA
02/2012   Course Information Sheet Created