

CSE 5521 (Approved): Survey of Artificial Intelligence I: Basic Techniques

Course Description

Survey of the basic concepts and techniques in artificial Intelligence, including problem solving, knowledge representation, and machine learning.

Prior Course Number: CSE 630

Transcript Abbreviation: Intr Artif Intell

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Undergrad, Graduate

Student Ranks: Senior, Masters, Doctoral

Course Offerings: Autumn, Spring

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 14 Week

Credits: 2.0

Repeatable: No

Time Distribution: 3.0 hr Lec

Expected out-of-class hours per week: 3.0

Graded Component: Lecture

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: CSE 2331 or (CSE 222 and Math 366)

Exclusions: Not open to students with credit for CSE 3521 or CSE 630

Cross-Listings:

The course is required for this unit's degrees, majors, and/or minors: No

The course is a GEC: No

The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.0901

Subsidy Level: Doctoral Course

Programs

Abbreviation	Description
MS CSE	MS Computer Science and Engineering
PhD CSE	PhD Computer Science and Engineering

Course Goals

Master basic search techniques for problem-solving, including systematic blind search, heuristically-guided search, and optimal search.
Be competent with game tree search methods and the requirements for expert-level game play.
Be familiar with using logic and proof as a basis for knowledge representation and automated reasoning.
Be familiar with multiple knowledge-representation formalisms.
Be exposed to problems in common sense reasoning and language understanding.

Be exposed to integrated AI architectures as a platform for building AI systems.
Be exposed to machine learning techniques and the kinds of problem they solve.
Be exposed to state-of-the-art AI applications related to robotics, machine vision, speech recognition, and computer games.

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Basic representation and problem solving methods.	6.0							
Search techniques and game playing.	6.0							
Knowledge representation using logic, automated proof techniques.	6.0							
Machine learning, probabilistic inference.	6.0							
Planning and common sense reasoning.	3.0							
Perception and communication.	4.0							
Applications.	6.0							
AI & Games.	3.0							

Representative Assignments

Compare breadth-first, depth-first, and A* search on a problem domain.
Apply reinforcement learning to maze navigation.

Grades

Aspect	Percent
Homeworks and Labs	40%
Midterm	25%
Final	35%

Representative Textbooks and Other Course Materials

Title	Author
<i>Artificial Intelligence, A Modern Approach (3rd edition)</i>	Stuart Russell and Peter Norvig

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
***	a	An ability to apply knowledge of mathematics, science, and engineering.
*	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
**	c	An ability to design a system, component, or process to meet desired needs.
	d	An ability to function on multi-disciplinary teams.
**	e	An ability to identify, formulate, and solve engineering problems.
*	f	An understanding of professional and ethical responsibility.
	g	An ability to communicate effectively.
*	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
*	i	A recognition of the need for, and an ability to engage in life-long learning.

Course Contribution		College Outcome
	j	A knowledge of contemporary issues.
**	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

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