

<b>Course Number</b>	<b>CS 436</b>	<b>Course Title</b>	<b>Artificial Intelligence I</b>				
<b>Semester Hours</b>	<b>3</b>	<b>Course Coordinator</b>	<b>Banafsheh Rekabdar</b>				
<b>Catalog Description</b>	Search and heuristics, problem reduction. Predicate calculus, automated theorem proving. Knowledge representation. Applications of artificial intelligence. Parallel processing in artificial intelligence.						
<b>Textbooks</b>							
<b>SP20</b>							
Sutton, R. S. & Barto, A. G. (2018). <i>Reinforcement Learning: An Introduction</i> . MIT Press, 2 <sup>nd</sup> Edition. ISBN: 9780262039246.							
<b>References</b>							
<b>Course Learning Outcomes</b>							
<ul style="list-style-type: none"> <li>• To learn the basic concepts and techniques of artificial intelligence, research areas and applications.</li> <li>• To understand the concepts of heuristic search and knowledge, and the relevance of AI research to cognitive science.</li> <li>• To learn Lisp and Prolog programming languages.</li> </ul>							
<b>Assessment of the Contribution to Student Outcomes</b>							
<b>Outcome →</b>	1	2	3	4	5	6	7
<b>Assessed →</b>	X	X	X	X	X	X	
<b>Prerequisites by Topic</b>							
CS 311 and 330 each with a grade of <i>C</i> or better or graduate standing.							

**Major Topics Covered in the Course**

1. Artificial intelligence: introduction, intelligent agents {3 classes}
2. Problem solving: solving problems by searching, informed search and exploration, constraint satisfaction problems, adversarial search {8 classes}
3. Knowledge and reasoning: logical agents, first-order logic, inference in first-order logic, knowledge representation {8 classes}
4. Planning: planning and acting in the real world {3 classes}
5. Uncertain knowledge and reasoning: uncertainty, probabilistic reasoning, probabilistic reasoning over time, making simple decisions, making complex decisions {10 classes}
6. Learning: learning from observations, knowledge in learning, statistical learning methods, reinforcement learning {4 classes}
7. Communicating, Perceiving, and Acting: communication, probabilistic language processing, perception, robotics {4 classes}

NOTE: When course is taken as 500-level credit (CS 591 “Special Topics”), there will be additional requirements such as a research project.