

**UNIVERSITY OF GUYANA  
FACULTY OF NATURAL SCIENCES  
DEPARTMENT OF COMPUTER SCIENCE**

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**Course Number:** CSE 4101  
**Course Name:** Artificial Intelligence I  
**Course Credit:** 4

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**Description:** This course is a fourth year first semester course intended for students pursuing the four year full time Computer Science program. The course is designed to provide a general introduction to Artificial Intelligence fundamental concepts and techniques. It introduces students to the basics of knowledge representation, problem solving, and learning methods of artificial intelligence. Upon completion of students should be able to develop intelligent systems by assembling solutions and appreciate the role of understanding human intelligence from a computational perspective.

**Exemption(s):** There are no exemptions for this course.

**Pre-requisites:**

**Follow-On Courses:** Optionally CSE 4202 - Artificial Intelligence II

**Learning Outcomes:**

At the end of this course, students will be able to:

1. Discuss fundamental concepts and techniques of artificial intelligence, in areas such as problem solving, search, knowledge representation, machine learning, and planning
2. Apply these concepts to solve specific problems and to build simple intelligent systems.

**Course Content:**

WEEK	TOPICS	Lecture HOURS	Lab HOURS
1	Fundamental Issues of Artificial Intelligence	3	

	<ul style="list-style-type: none"> <li>- History</li> <li>- Philosophical Questions</li> <li>- Turing Test</li> <li>- Searle's Chinese Room Thought Experiment</li> </ul> <p>Labs</p>		2
2	<p>Fundamental Issues of Artificial Intelligence</p> <ul style="list-style-type: none"> <li>- Ethical issues in AI</li> <li>- Optimal vs. Human-like Reasoning &amp; Behaviour</li> <li>- Modeling the World</li> <li>- Role of Heuristics</li> </ul> <p>Assignment # 1</p> <p>Labs</p>	3	2
3	<p>Intelligent Agents</p> <ul style="list-style-type: none"> <li>- Autonomous vs. Semi-autonomous</li> <li>- Agent Architectures</li> <li>- Agents and their Environment</li> </ul> <p>Labs</p>	3	2
4	<p>Game Theory</p> <p>Multiagent Systems</p>	3	

	<ul style="list-style-type: none"> <li>- Institutions and norms</li> </ul> <p>Labs</p>		2
5	<p>Problem Solving</p> <ul style="list-style-type: none"> <li>- Problem Solving Agents</li> <li>- Problem Spaces</li> </ul> <p>Test #1</p> <p>Labs</p>	<p>2</p> <p>1</p>	2
6	<p>Problem Solving</p> <ul style="list-style-type: none"> <li>- Problem Formation</li> <li>- Solving Problems by Search</li> </ul> <p>Assignment # 2</p> <p>Labs</p>	3	2
7	<p>Search</p> <ul style="list-style-type: none"> <li>- Uninformed Search Strategies: Breadth-First Search, Depth-First Search, Depth-limited Search, Iterative Deepening Depth-first Search</li> <li>- Heuristic Search (Hill Climbing, Generic Best-First, A*)</li> <li>- Constraint Satisfaction (Backtracking, Local Search)</li> </ul>	3	

	Labs		2
8	<p>Knowledge and Reasoning</p> <ul style="list-style-type: none"> <li>- Logical Reasoning</li> <li>- First Order Logic</li> <li>- Forward Chaining and Backward Chaining</li> </ul> <p>Labs</p>	3	2
9	<p>Knowledge and Reasoning</p> <ul style="list-style-type: none"> <li>- Propositional and Predicate Logic</li> <li>- Fuzzy Logic</li> <li>- Bayes Theorem</li> </ul> <p>Test # 2</p> <p>Tutorials/Labs</p>	<p>2</p> <p>1</p>	2
10	<p>Communication</p> <ul style="list-style-type: none"> <li>- Natural Language Processing</li> <li>- Ontologies</li> </ul> <p>Assignment #3</p>	3	



**Method of Assessment:**

**Coursework (40%)**

- Tests - 20%
- Assignments 20%

**Final Examination (60%)**

**Required Reading(s):**

Artificial Intelligence: A Modern Approach by Stuart Russell & Peter Norvig

**Recommended Reading(s)**