



**COURSE DESCRIPTION FORM**

**INSTITUTION**                      Department of Computer Science & IT, University Of Sargodha

**PROGRAM (S) TO BE EVALUATED**      For BS Level

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**A. Course Description**

<b>Course Code</b>	CS-3811
<b>Course Title</b>	Artificial Intelligence
<b>Credit Hours</b>	3 CR
<b>Prerequisites by Course(s) and Topics</b>	CMP-2111(Discrete Structures)
<b>Assessment Instruments with Weights</b> (homework, quizzes, midterms, final, programming assignments, lab work, etc.)	Quizzes and Homework: 20% Midterm: 30%, Final Term: 50 %
<b>Course Coordinator</b>	Dr. Qaiser Abbas
<b>URL (if any)</b>	<a href="http://www.clsp.org/qabbas/ai.html">http://www.clsp.org/qabbas/ai.html</a>
<b>Current Catalog Description</b>	Not Available as per curriculum
<b>Textbook (or Laboratory Manual for Laboratory Courses)</b>	Artificial Intelligence: A Modern Approach, by Russell and Norvig, Prentice Hall. 2ndEdition. ISBN-10: 0137903952
<b>Reference Material</b>	<ul style="list-style-type: none"> <li>• Artificial Intelligence: A Systems Approach by M. Tim Jones, Jones and Bartlett Publishers, Inc; 1stEdition (December 26, 2008). ISBN-10: 0763773379</li> <li>• Artificial Intelligence in the 21st Century by Stephen Lucci , Danny Kopec, Mercury Learning and Information (May 18, 2012). ISBN-10: 1936420236</li> </ul>
<b>Course Goals</b>	This course will introduce the basic principles in artificial intelligence. It will cover simple representation schemes, problem solving paradigms, constraint propagation, and search strategies. Areas of application such as knowledge representation, natural language processing, expert systems, vision and robotics will be explored. The Prolog programming language will also be introduced.
<b>Topics Covered in the Course, with Number of Lectures on</b>	<ul style="list-style-type: none"> <li>• Introduction: What is AI, Foundations of AI, History of AI.</li> <li>Intelligent Agents: Agents and Environments, The Nature of</li> </ul>



<p><b>Each Topic</b> (assume 15-week instruction and one-hour lectures)</p>	<p>Environments, The Structure of Agents [Week 1-2]</p> <ul style="list-style-type: none"> <li>• Problem Solving by Searching: Problem Solving Agents, Searching for Solutions, Uninformed Search Strategies. [Week 3-4]</li> <li>• Breadth-First Search, Depth-First Search, Depth-limited Search, Iterative Deepening, Depth-first Search, Comparison of Uninformed Search Strategies. [Week 5-6]</li> <li>• Informed Search and Exploration: Informed (Heuristic) Search Strategies: Greedy Best- first Search, A* Search, Heuristic Functions. [Week 7-8]</li> <li>• Local Search Algorithms and Optimization Problems. [Week 9-10]</li> <li>• Constraint Satisfaction Problems: Backtracking Search for CSPs, Local Search for CSPs. [Week 11-12]</li> <li>• Adversarial Search: Games, Minimax Algorithm, Alpha-Beta Pruning. [Week 13-14]</li> <li>• Reasoning and Knowledge Representation: Introductions to Reasoning and Knowledge Representation, Propositional Logic, First Order Logic: Syntax and Semantics of First-Order Logic, Knowledge Engineering in First-Order Logic, [Week 15]</li> </ul>			
<p><b>Laboratory Projects/Experiments Done in the Course</b></p>	<p>Through Lab Manual</p>			
<p><b>Programming Assignments Done in the Course</b></p>	<p>Through Lab Manual</p>			
<p><b>Class Time Spent on</b> (in credit hours)</p>	<p><b>Theory</b></p>	<p><b>Problem Analysis</b></p>	<p><b>Solution Design</b></p>	<p><b>Social and Ethical Issues</b></p>
	<p>24 Hrs</p>	<p>12 Hrs</p>	<p>12 hrs</p>	<p>Not Applicable</p>
<p><b>Oral and Written Communications</b></p>	<p>Students are required to submit at least 3 written reports in the form of assignments. Presentations in the form of groups would be arranged in the last week if course would be covered before the 16<sup>th</sup> week.</p>			

Instructor Name Dr. Qaiser Abbas

Instructor Signature \_\_\_\_\_

Date \_\_\_\_\_