

<b>ITE2010</b>	<b>Artificial Intelligence</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>J</b>	<b>C</b>
		<b>3</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>
<b>Pre-requisite</b>	<b>ITE1006</b>	<b>Syllabus version</b>				
		1.0				
<b>Course Objectives:</b>						
<ul style="list-style-type: none"> <li>To understand and explain the basics of Artificial Intelligence</li> <li>To improve the problem of solving techniques, knowledge representation and reasoning systems capability.</li> <li>To gain the knowledge for developing Expert systems</li> </ul>						
<b>Expected Course Outcome:</b>						
1) Comprehend the fundamentals of problem solving methods using artificial intelligence and intelligent agents.						
2) Understand the problem space and searching methods and their merits and demerits in the context of artificial intelligence.						
3) Analyze the heuristic searching procedure for problem solving.						
4) Elaborate different data representations and languages for artificial intelligent systems.						
5) Understand Predicate Logic and use it to solve problems						
6) Comprehend the knowledge to take decisions under uncertainties.						
7) Develop skills for planning and learning.						
8) Develop applications using artificial intelligence to solve optimization problems.						
<b>Student Learning Outcomes (SLO): 1, 2, 9</b>						
[1] Having an ability to apply knowledge of mathematics, science, and engineering						
[2] Having a clear understanding of the subject related concepts and of contemporary issues						
[9] Having problem-solving ability solving social issues and engineering problems						
<b>Module:1</b>	<b>AI-Foundations</b>	<b>5 hours</b>				
History-Intelligent Agents –Types - AI Techniques –Data and Knowledge- Problem Solving.						
<b>Module:2</b>	<b>Problem Spaces and Search:</b>	<b>7 hours</b>				
Search Problem – Production Rules – Breadth-First Search(BFS) – Depth-First Search(DFS) – Solution of search problems by BFS and DFS – Travelling Salesman Problem – Merits and Demerits of BFS and DFS.						
<b>Module:3</b>	<b>Heuristic Search</b>	<b>8 hours</b>				
Generate-and-Test – Hill Climbing — Steepest-Ascent Hill Climbing –Local maximum, Plateau and Ridge – Best-First Search – OR- Graphs - AND-OR Graphs – Problem Reduction – Constraint Satisfaction – Cryptarithmic Problem.						

<b>Module:4</b>	<b>Knowledge Representation</b>	<b>6 hours</b>	
Representations and Mappings – Approaches to Knowledge Representation – Important Attributes: instance and is a - Property Inheritance – Inheritable Knowledge – Slot-and-Filter Structure – Queries.			
<b>Module:5</b>	<b>Predicate Logic</b>	<b>7 hours</b>	
Representing Facts in Logic (wff ‘ s) – Conversion of wff ‘ s to Clause Form – Resolution – Propositional Resolution – Problems using Propositional Resolution- The Unification.			
<b>Module:6</b>	<b>Uncertainty-Probabilistic Reasoning</b>	<b>5 hours</b>	
Prior and Posterior Probabilities - Making simple and complex decisions – Bayes’ Theorem - Nonmonotonic reasoning and Justification-Based Truth Maintenance System (TMS).			
<b>Module:7</b>	<b>Planning and Learning</b>	<b>4 hours</b>	
Representation for planning-Partial orderplanning – Total order Planning – Learning – Learning by -Analyzing Differences-Explaining Experiences - Correcting Mistakes.			
<b>Module:8</b>	<b>Contemporary issues:</b>	<b>3 hours</b>	
	<b>Total Lecture hours:</b>	<b>45 hours</b>	
<b>Text Book(s)</b>			
1.	Elaine Rich and Kevin Knight, Artificial Intelligence, Third Edition, Tata McGraw Hill,2008.		
<b>Reference Books</b>			
1.	Patrick Henry Winston, Artificial Intelligence, Third Edition, Addison Wesley, 2011.		
2.	Stuart J. Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, Third Edition, PHI, 2015.		
Recommended by Board of Studies		05-03-2016	
Approved by Academic Council		No. 40	Date 18-03-2016