

Semester		
Course	<b>Minor – ARTIFICIAL INTELLIGENCE</b>	
Paper Code		
Paper Title	<b>Foundations of Artificial Intelligence</b>	
No. of Credits	<b>4</b>	
Theory/ Practical / Composite	<b>Composite</b>	
Minimum no. of preparatory hours per week a student have to devote	<b>5</b>	
Number of Modules	One	
Syllabus	<ol style="list-style-type: none"> <li>1. Introduction to Artificial Intelligence, Background and Applications, Turing Test</li> <li>2. State Space search, Production Systems, formulating the state-space; breadth first search, depth first search</li> <li>3. Problem characteristics and applications, Use of heuristics; Heuristic Search Techniques: Generate and Test, hill climbing, Best first search, A* algorithm, Problem Reduction, AO* algorithm.</li> <li>4. Game Playing: Minimax and game trees, refining minimax, Alpha – Beta pruning.</li> <li>5. Knowledge Representation: First Order Predicate Logic, Resolution Principle, Unification; Semantic Net</li> <li>6. Introduction to Generative AI.</li> <li>7. Practical – Using Python.</li> </ol>	
Learning outcomes	<p>After completing this course, students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the fundamental concepts, background, and real-world applications of Artificial Intelligence, including the Turing Test.</li> <li>2. Apply state-space search techniques, including breadth-first and depth-first search, for problem-solving.</li> <li>3. Utilize heuristic search strategies such as hill climbing, best-first search, A* and AO* algorithms to optimize decision-making.</li> <li>4. Analyze and implement game-playing strategies using minimax, game trees and alpha-beta pruning for AI-based decision processes.</li> <li>5. Explore knowledge representation techniques, including First Order Predicate Logic, resolution, unification, and semantic networks, along with an introduction to Generative AI.</li> </ol>	
Reading / Reference List	<ol style="list-style-type: none"> <li>1. Artificial Intelligence: A Modern Approach by Stuart Russell &amp; Peter Norvig.</li> <li>2. Artificial Intelligence by Elaine Rich and Kevin Knight.</li> <li>3. Principles of Artificial Intelligence, Nils J. Nilsson</li> </ol>	
Evaluation	Theory CIA: 12 Attendance: 3 Semester Exam: 45	Practical CA: 38 Attendance: 2
Paper Structure for Theory Semester Exam	Answer 3 out of 5 of 15 marks each	