Semester I
Name of the Programme: M.Sc. in Artificial Intelligence
Course code: CSI-500
Title of course: Fundamentals of Artificial Intelligence
Number of credits: 2(2L+0T+0P)
Effective from AY: 2023-24

Prerequisites for the course	Programming back programming and probability and statistics and linear algebra	
Objectives	To develop a basic understanding of problem solving, knowledge representation, reasoning and learning methods of AI.	
Content	Introduction -Intelligent Agents, Problem-solving Solving Problems by Searching -Search in Complex Environments - Adversarial Search and Games- Constraint Satisfaction Problems Knowledge, reasoning, and planning Knowledge Representation-First-Order Predicate Logic - Unification Forward and Backward Chaining - Resolution - Ontological Engineering Categories and Objects - Events-Mental Events and Mental Objects - Reasoning Systems for Categories - Reasoning with Default Information Uncertain knowledge and reasoning Quantifying Uncertainty - Probabilistic Reasoning - Probabilistic Reasoning over Time Probabilistic Programming -Making Simple Decisions - Making Complex Decisions –MultiAgent Decision Making Machine Learning from Examples - Learning Probabilistic Models - Deep Learning - Reinforcement Learning - Communicating, Perceiving, and Acting Natural Language Processing - Deep Learning for Natural Language Processing - Computer Vision - Robotics. Artificial Intelligence applications Language Models - Information Retrieval - Information Extraction Natural Language Processing - Machine Translation - Speech Recognition Robotics-Hardware and Software for Robots - Planning and Perception Explainable AI - Definitions and concepts such as black-box models, transparency, interpretable machine learning and explanations. - Decision-making and decision support, Human-Computer Interaction (HCI) and AI. - Explainable AI. - Methods for Explainable AI. - Applications and examples. - Trust and acceptance-Evaluation methods and metrics. - Ethical, legal and social issues of explainable AI. Contemporary issues in AI- Philosophy, Ethics, and Safety of AI - The Future of AI	5 hours 3 hours 3 hours 6 hours 2 hours 7 hours 4 hours
Pedagogy	Tutorials / Hands-on-assignments / Self-study	
References/ Reading	1. A Classical Approach to Artificial Intelligence, M.C. Trivedi, Khanna Book Publishing, 2019. 2. Artificial Intelligence: A modern approach by Stuart Russel, Pearson Education, 2010. 3. Artificial Intelligence by Rich and Knight, The McGraw Hill, 2017. 4. Artificial Intelligence: A new synthesis by Nils and Nilson, Elsevier, 1997. 5. Artificial Intelligence by Luger, Pearson Education, 2002. 6. Artificial Intelligence by Padhy, Oxford Press, 2005.	

	7.https://www.edx.org/course/artificial-intelligence-ai 8.https://www.udemy.com/course/artificial-intelligence-az/
Course Outcomes	1. Understand the basic concepts and techniques of Artificial Intelligence. 2. Apply AI algorithms for solving practical problems. 3. Describe human intelligence and AI. 4. Explain Expert System and implementation, neural network and fuzzy logic

(Back to top)