Course Title	Artificial Intelligence				
Course Code	CSE330				
Course Type	Compulsory				
Level	Bachelor (1st Cycle)				
Year / Semester	3rd Year / 6th Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	History, theory, and computational methods of artificial intelligence. Basic concepts include representation of knowledge and computational methods for reasoning. The students will also be exposed to different applications areas of AI, such as expert systems, robotics, computer vision, natural language understanding, and planning.				
Learning Outcomes	By the end of the semester, students should be able to: • Describe the functions of intelligent agents, and create computational agents in a programming language • Identify the major classical and modern AI paradigms, and explain how they relate to each other • Explain the concept of planning, and construct planning agents in a programming language. • Analyze the structure of a given problem such that they can choose an appropriate paradigm in which to frame that problem • Implement a wide variety of both classical and modern AI algorithms				
Prerequisites	CSE200	Corequisites	MAT225		
Course Content	Introduction to Artificial Intelligence: What is AI; The Foundations of Artificial Intelligence; The History of Artificial Intelligence; The State of the Art; Intelligent Agents; Agents and Environments; Good Behavior: The Concept of Rationality; The Nature of Environments; The Structure of Agents Problem-solving: Solving Problems by Searching; Problem-Solving Agents; Example Problems; Searching for Solutions; Uninformed Search Strategies; Informed (Heuristic) Search Strategies; Heuristic Functions; Beyond Classical Search; Local Search Algorithms and Optimization Problems; Local Search in Continuous Spaces; Searching with Nondeterministic Actions; Searching with Partial Observations; Online Search Agents and Unknown Environments; Advanced Searching Strategies:				

	Adversarial Search; Games; Optimal Decisions in Games; Alpha—Beta Pruning; Imperfect Real-Time Decisions; Stochastic Games; Partially Observable Games; State-of-the-Art Game Programs; Alternative Approaches; Defining Constraint Satisfaction Problems; Constraint Propagation: Inference in CSPs; Backtracking Search for CSPs; Local Search for CSPs; The Structure of Problems; Knowledge and Logic: Knowledge-Based Agents; Logic; Propositional Logic: A Very Simple Logic; Propositional Theorem Proving; Effective Propositional Model Checking; Agents Based on Propositional Logic; First-Order Logic; Syntax and Semantics of First-Order Logic; Using First-Order Logic; Knowledge Engineering in First-Order Logic; Propositional vs. First-Order Inference; Unification and Lifting; Forward Chaining; Backward Chaining; Resolution Planning: Definition of Classical Planning; Algorithms for Planning as State-Space Search; Planning Graphs; Other Classical Planning Approaches; Analysis of Planning Approaches; Planning and Acting in the Real World; Time, Schedules, and Resources; Hierarchical Planning; Planning and Acting in Nondeterministic Domains; Multiagent Planning; Knowledge Representation: Ontological Engineering; Categories and Objects; Events; Mental Events and Mental Objects; Reasoning Systems for Categories; Reasoning with Default Information; The Internet Shopping World; Quantifying Uncertainty; Acting under Uncertainty; Basic Probability Notation; Inference Using Full Joint Distributions; Independence; Bayes' Rule and Its Use; Probabilistic Reasoning; Representing Knowledge in an Uncertain Domain; The Semantics of Bayesian Networks; Efficient Representation of Conditional Distributions; Exact Inference in Bayesian Networks; Approximate Inference in Bayesian Networks; Relational and First-Order Probability Models; Other Approaches to Uncertain Reasoning; Time and Uncertainty; Inference in Temporal Models; Hidden Markov Models; Kalman Filters; Dynamic Bayesian Networks; Keeping Track of Many Objects;
Teaching Methodology	Face – to – face
Bibliography	Russel, S. and Norvig, P. Artificial Intelligence: A Modern Approach, Pearson. Neapolitan, R. E. and Jiang, X. Artificial Intelligence: With an Introduction to Machine Learning, CRC Press. Negnevitsky, M. Artificial Intelligence: A Guide to Intelligent Systems, Addison-Wesley

Assessment	Mid – Term Examination 30% Final Examination 30% Assignments/Lab 30% Class Participation and Attendance 10% 100%
Language	English