AN INTRODUCTION TO ARTIFICIAL INTELLIGENCE

PROF. MAUSAM

Department of Computer Science and Engineering

IIT Delhi

PRE-REQUISITES : Data Structures, Probability

INTENDED AUDIENCE : Undergraduate students in computer science

INDUSTRIES APPLICABLE TO : Most software companies

COURSE OUTLINE :
The course introduces a variety of concepts in the field of artificial intelligence. It discusses the philosophy of AI, and how to model a new problem as an AI problem. It describes a variety of models such as search, logic, Bayes nets, and MDPs, which can be used to model a new problem. It also teaches many first algorithms to solve each formulation. The course prepares a student to take a variety of focused, advanced courses in various subfields of AI.

ABOUT INSTRUCTOR :
Prof. Mausam is an Associate Professor of Computer Science department at IIT Delhi, and an affiliate faculty member at University of Washington, Seattle. His research explores several threads in artificial intelligence, including scaling probabilistic planning algorithms, large-scale information extraction over the Web, and enabling complex computation over crowdsourced platforms. He received his PhD from University of Washington in 2007 and a B.Tech. from IIT Delhi in 2001. ArnetMiner, a global citation aggregator, has rated Mausam as the 25th most influential scholar in AI for 2019. He was recently awarded the AAAI Senior Member status for his long-term participation in AAAI and distinction in the field of artificial intelligence.

COURSE PLAN :

Week 1**:** Introduction: Philosophy of AI, Definitions

Week 2**:** Modeling a Problem as Search Problem, Uninformed Search

Week 3**:** Heuristic Search, Domain Relaxations

Week 4**:** Local Search, Genetic Algorithms

Week 5**:** Adversarial Search

Week 6**:** Constraint Satisfaction

Week 7**:** Propositional Logic & Satisfiability

Week 8**:** Uncertainty in AI, Bayesian Networks

Week 9**:** Bayesian Networks Learning & Inference, Decision Theory

Week 10**:** Markov Decision Processes

Week 11**:** Reinforcement Learning

Week 12**:** Introduction to Deep Learning & Deep RL