Suggested Teaching Guidelines for

Fundamentals of Artificial Intelligence PG-DAI August 2025

Duration: 40 classroom hours

Objective: To introduce the student to fundamentals of Artificial Intelligence.

Prerequisites: Knowledge of programming language, Computing Fundamentals, and some basic statistical knowledge.

Evaluation method: Theory exam– 80% weightage
Internal exam– 20% weightage

List of Books / Other training material

Text Book:
1. Artificial Intelligence: A Modern Approach, 4e, Peter Norvig, Stuart J. Russell, PearsonEducation, 4th Edition.

Reference Book:
1. Artificial Intelligence by Example, Denis Rothman
2. Artificial Intelligence by Saroj Kaushik

Note:
- ***Each session mentioned is of 2 hours' theory. Faculty can give case studies to students***
- ***Faculties are advised to relate the topics with real world applications.***

Session 1 & 2
Lecture
- Introduction to AI
- AI Evolution: Turing's Work
- Turing Machine & Test

Session 3 & 4
Lecture
- Ethics of AI
- Structure of AI
- Real world Implications
- Revolution & Current Trends in AI
- Being Human in the Age of AI
- Responsible AI

Session 5
Lecture
- Artificial Life, Learning through

- Emergent Behavior
- Rules and Expert Systems

Session 6 & 7
Lecture

- Supervised & Unsupervised Learning

Session 8 & 9
Lecture

- Knowledge Representation
- Problem Solving
- Types of Searches
- Search Methodologies, Classical Search Methodologies
- Beyond Classical Search, Parallel Search, Search Engines
- Adversarial Search

Session 10 & 11
Lecture

- Intelligent Agents, Uninformed Search
- Constraint Satisfaction Search
- Combinatorial Optimization Problems

Session 12 & 13
Lecture

- Knowledge Representation and Automated
- Propositional and Predicate Logic

Session 14 & 15
Lecture

- Logic Concepts & Logic Programming
- Inference and Resolution for Problem Solving

Session 16, 17 & 18
Lecture

- Introduction to Big data
- Structured and Unstructured Data
- Relevance of Big data in AI
- Data Analysis and Data Analytics
- Applications of Big data

Session 19 & 20
Lecture

- Inference and Resolution for Problem Solving
- Advanced Problem-Solving Paradigm: Planning