Purpose
Most modern information systems incorporate the use of Artificial Intelligence which is considered to be a branch of computer science that is concerned with the automation of intelligent behavior. The purpose of this course is to expose students to diverse programming techniques for programming AI systems with an emphasis on logic programming and equip them with necessary skills in programming. The students are exposed to different paradigms of programming and more so in knowledge-based systems, intelligent agents and machine learning systems. Students have hands on experience in using various tools used in programming.

Course Objectives/ Outcomes
By the end of the course, students should:
1. Demonstrate an in-depth understanding of theories, concepts and techniques in Artificial Intelligence programming
2. Appreciate the concepts in propositional and predicate calculus and Apply logic-based inference strategies.
3. Use Prolog, a logic programming language, to implement logical reasoningsystems.
4. Have hands on experience in programming artificial intelligent agents and machine learning systems.

Course Content
- **Introduction to A.I**
  - Introductory AI Systems and their Commercial Implications:
  - KB systems(ES, DSS, CBR, Pattern matching (machine vision, Language systems));
  - ML Systems(ANN, Datamining);
  - Statistics based programs (example NLP)

- **Knowledge Representation in KBS**
  - Relational Databases.
    - As used in AI systems while dealing with machine learning systems
  - Knowledge bases
  - Case bases
  - Application related schemes such as:
    - Corpus .... For Statistical machine learning

- **Inferencing Strategies**
  - Inference Strategies
  - Modus ponens/ tollens in Predicate logic
- Resolution in Predicate logic
- Backward, Forward Chaining in Rules
- Expectation driven processing in frames
- Case-based reasoning
- **Problem representation using problem state-trees**
- State-space trees and related searching strategies
- Adversarial trees and related searching strategies
- **Prolog programming**
  - Laboratories
- **Agent Programming**
  - Laboratories
- **Machine Learning Systems**
  - Overview
  - Practical Assignments

**Teaching Methodologies**
Lectures, group discussions, laboratories

**Instructional Materials/Equipment**
Whiteboard, computers, overhead projectors

**Methods of Evaluation**

*Continuous Assessment*  - 50%
- Seat-in Tests  - 20%
- Practical/ Assignments  - 30%

*Final Examination*  - 50%

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100%

**Textbooks for the Course**
1 Programming Manual- provided.
2 WWW as guided topic to topic.