Code: CSC4504   Course Title: Formal Languages and Applications

Keywords :

Formal modeling, B and Event-B, Logic Programming, Program verification, Artificial Intelligence

Objectives :

Understand the principles of formal modelling.

To be able to reason about properties of formal models.

To be able to compare different formal modeling languages.

To use a formal modeling tool for the verification of programs developed formally.

To understand the relationship between program proving and automated reasoning.

To understand the history and current state of the art in AI with focus on use of AI in supporting the engineering of software and systems

Content :

Logic and overview of different logics used by software engineers.

B and/or Event-B: with focus on refinement driven development for correctness by construction

Proof and verification: using an automated theorem prover

Logic programming.

Deduction, reasoning and problem solving.

Foundations of AI: Symbolic reasoning, expert systems, Brute Force methods, Search and optimization, uncertainty, statistical learning, natural language processing