5th Semester

MCC 501: ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS (3-1-0)

Module-1 (15 hours)

Artificial Intelligence: Introduction, Intelligent Agents: Agents & Environments, Concept of Rationality, Nature & Structure of Agents; Problem Solving: Solving Problems by Searching, Classical Search, Adversarial Search, Constraint Satisfaction Problems. Knowledge, Reasoning and Planning: Logical agents, First order logic, Inference in First order logic.

Module-2 (13 hours)

Classical planning, Knowledge Representation; Uncertain Knowledge and Reasoning: Probabilistic Reasoning, Learning from Examples, Knowledge in Learning; Natural Language Processing: Language models, Text Classification, information retrieval, information extraction

Module-3 (12 hrs)

Natural Language for Communication: Phrase structure Grammars, Syntactic Analysis, Augmented grammars and semantic interpretation, Machine translation, Speech recognition; Perception; Expert Systems: Introduction, Design of Expert systems.

Text Books:

1. Stuart **Russell** and Peter **Norvig**, "*Artificial Intelligence: A Modern Approach*", Third Edition, 2010, Pearson Education, New Delhi.
   Chapters: 1, 2, 3, 4 (4.1, 4.2), 5 (5.1, 5.2, 5.3), 6, 7, 8, 9, 10 (10.1, 10.2, 10.3, 10.5), 12, 14 (14.1-14.6), 18 (18.1- 18.7), 19 (19.1, 19.2, 19.3), 22, 23, 24 (24.1-24.3, 24.5).
2. Joseph **Giarratano** and Gary **Riley**, "*Expert Systems: Principles and Programming*", Fourth Edition, CENGAGE Learning India Pvt. Ltd., New Delhi.
   Chapters: 1 and 6.

Reference Books:

1. Elaine A. **Rich** and Kevin **Knight**, "*Artificial Intelligence***", 3rd Edition, 2009, McGraw-Hill Education (India), New Delhi.
2. Nills J. **Nilsson**, "*Artificial Intelligence: A New Synthesis*", 2nd Edition, 2000, Elsevier India Publications, New Delhi.
3. Michael **Negnevitsky**, "*Artificial Intelligence: A Guide to Intelligent Systems*", Second Edition, 2005, Pearson Education, Inc. New Delhi.
4. Dan W. **Patterson**, "*Introduction to Artificial Intelligence and Expert Systems*", 1st Edition, 1996, PHI Learning Pvt. Ltd., New Delhi.
5. Ben **Coppin**, "*Artificial Intelligence Illuminated*", 2005, Narosa Publication, New Delhi. ISBN: 978-81-7319-671-3