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| **Course Title** | **Artificial Intelligence** |
| **Course Code** | **DI-326** |
| **Credit Hours** | 3 |
| **Category** | Technical Elective |
| **Prerequisite** | Data Structures and Algorithms |
| **Co-Requisite** | None |
| **Follow-up** | None |
| **Course Description** | **Introduction:** Basic component of AI, Identifying AI systems, branches of AI, etc. types of problems addressed. **Searching Strategies:** exhaustive & heuristic search techniques, informed searching, uninformed searching, local searching. Game playing. Genetic algorithms. Constraint. satisfaction problems. **Symbolic AI & Logic programming:** The physical symbol system hypothesis. Knowledge representation & search in the context of logic programming. **Reasoning in logic programming:** unification, horn clause logic, and resolution, Prolog as example logic programming formalism. **Knowledge Representation Schemas:** Logic, propositional logic, first order logic, frames, semantic nets, scripts; problems in knowledge representation. Expert systems. **Machine Learning:** Introduction, unsupervised learning, supervised learning, reinforcement learning, decision trees, Bayesian classification, artificial neural networks, **Selected Topics in AI:** Fuzzy logic, natural language processing, computer vision. |
| **Text Book(s)** | 1. Stuart Russell and Peter Norvig, Artificial Intelligence. A Modern Approach, 4th edition, Prentice Hall, Inc., 2020. |
| **Reference Material** | 1. Luger, G.F. and Stubblefield, W.A., 2009. AI algorithms, data structures, and idioms in Prolog, Lisp, and Java. Pearson Addison-Wesley.<br>2. George F. Luger, Artificial Intelligence - Structures and Strategies for Complex Problem Solving, 6th Edition, Pearson, 2008, ISBN-13: 978-0321545893.<br>3. Hart, P.E., Stork, D.G. and Duda, R.O., Pattern classification. John Willey & Sons, 2001.<br>4. Ivan Bratko, Prolog: Programming for Artificial Intelligence, 4th Edition, Pearson, 2011, ISBN-13: 978-0321417466.<br>5. P. Winston, Artificial Intelligence, 3rd Edition, Pearson, 1992, ISBN-13: 978-0201533774. |