ECSI/ECII 3206	Artificial Intelligence & Expert Systems	48 hrs

Purpose of the Course:

To equip the student with a comprehensive knowledge necessary to further a career in formulating and developing AI Expert systems

Expected Learning Outcomes:
The learner should be able to:

1. Describe the application of artificial intelligence in information technology systems
2. Apply techniques used in Artificial Intelligence including problem formulation, search, logic, probability and decision theory in implementing expert systems
3. Explain the key concepts in building and designing expert systems

Topics to be covered

Introduction to AI and Intelligent Agents. Techniques in AI include knowledge representation, problem solving, state space search, heuristics, pattern recognition, classification, inference, grammars, knowledge elicitation, knowledge engineering; Problem solving and search. Logical agents . First order logic. Building a knowledge base. Inference in first order logic. Probability and decision theory. Definition – history and applications – propositional calculus – predicate calculus – inference rules – structures and strategies for state space search – heuristic search algorithms – heuristics in games – complexity issues – control and implementation of state space search – production systems – planning – the blackboard architecture Introduction to understanding natural language – introduction to automated reasoning – introduction to machine learning. Knowledge intensive problem solving – expert system technology – rule-based expert systems – model based reasoning – case based reasoning – knowledge representation problem reasoning with uncertain or incomplete information – statistical approach – non-monotonic systems – fuzzy sets – knowledge representation – languages – issues – network representation – conceptual graphs – structured representation. Artificial Intelligence applications: natural language, vision, Robotics, Expert systems, Machine learning; Artificial Intelligence tools: introduction to Prolog

Mode of Delivery

Lectures , directed reading, Group/class discussions and practical exercises

Instructional materials / Equipment

Audio visual equipment, Computers, writing boards, writing materials, projectors

Course Assessment

Student Performance
Combination of continuous assessment tests (CAT)(minimum of two sit-in tests), individual assignment, Tutorials, practicals, seminar presentation and end of semester examinations.

Recommend Reading Materials

1.STUART RUSSELL AND PETER NORVIG(2009) .ARTIFICIAL INTELLIGENCE: A MODERN APPROACH. PRENTICE HALL. ISBN-10: 0136042597
2.STEPHEN LUCCI AND DANNY KOPEC(2012) .ARTIFICIAL INTELLIGENCE IN THE 21ST CENTURY.
3. M. TIM JONES(2008) .ARTIFICIAL INTELLIGENCE: A SYSTEMS APPROACH (COMPUTER SCIENCE) . JONES AND

BARTLETT PUBLISHERS, INC . ISBN-10: 0763773379
5. elias m. awad (2003). building and expert system. university of virginia
6. russell and norvig (2015) . artificial intelligence: a modern approach. pearson publication

References Recommended For Further Reading

1. JAMES BARRAT (2013) . OUR FINAL INVENTION: ARTIFICIAL INTELLIGENCE AND THE END OF THE HUMAN ERA.
2.IAN MILLINGTON AND JOHN FUNGE (2009). ARTIFICIAL INTELLIGENCE FOR GAMES. CRC PRES ISBN-10: 0123747317
3. KEVIN WARWICK (2011) . ARTIFICIAL INTELLIGENCE: THE BASICS