

# INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPT./CENTRE: **Electronics and Computer Engineering**

1. Subject Code: **EC - 382** Course Title: **Artificial Intelligence**

2. Contact Hours: **L: 3 T: 0 P: 0**

3. Examination Duration (Hrs.): **Theory**

0	3
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**Practical**

0	0
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4. Relative Weight: **CWS**

15
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**PRS**

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**MTE**

35
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**ETE**

50
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**PRE**

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5. Credits: 

0	3
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 6. Semester 

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**Autumn**

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**Spring**

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**Both**

7. Pre-requisite: **EC - 251**

8. Subject Area: **DEC**

9. Objective: To acquaint the students with the theoretical and computational techniques in Artificial Intelligence.

10. Details of the Course:

Sl. No.	Contents	Contact Hours
1.	<b>Fundamental Concepts:</b> Agents, environments, general model; Problem solving techniques.	4
2.	<b>Search Techniques:</b> Uninformed search, heuristic search, adversarial search and game trees; Solution of constraint satisfaction problems using search.	6
3.	<b>Knowledge Representation:</b> Propositional and predicate calculus, semantics for predicate calculus, inference rules, unification, semantic networks, conceptual graphs, structured representation, frames, scripts.	8
4.	<b>Prolog:</b> Basic constructs, answer extraction.	4
5.	<b>Bayesian Reasoning:</b> Bayesian networks, dynamic Bayesian networks.	4
6.	<b>Planning:</b> State-space search, planning graphs.	4
7.	<b>Learning:</b> Inductive learning, decision tree learning.	4
8.	<b>Advanced Topics:</b> Role of knowledge in language understanding, stages of language analysis, parsing using context free grammars, transition network parser, Chomsky hierarchy and context sensitive grammars, rule based expert systems, neural networks, genetic algorithms.	8
<b>Total</b>		<b>42</b>

11. Suggested Books:

<b>Sl. No.</b>	<b>Name of Books/Authors</b>	<b>Year of Publication</b>
1.	Russell, S. and Norvig, P., "Artificial Intelligence: A Modern Approach", Pearson Education.	2006
2.	Rich, E. and Knight, K., "Artificial Intelligence", Tata McGraw-Hill.	2006
3.	Nilsson, N. J., "Artificial Intelligence: A New Synthesis", Morgan Kaufmann.	1998
4.	Bratko, I., "Prolog Programming for Artificial Intelligence", 3 <sup>rd</sup> Ed., Pearson Education.	2001