

Artificial Intelligence: Course outline (2009/2010)

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Objectives

- Overview of main AI topics
- Wide spectrum of subjects (rather than just a few in detail)
- Methodology and tools for problem solving
- Outlook at AI research
- Propaedeutic to applications and advanced courses in problem solving, decision systems, planning, robotics, data mining, collective intelligence, etc.

Contents (1/2)

- Introduction: History and foundations of AI
- Problem solving:
 - Uninformed and informed Search
 - Constraint Satisfaction Problems and Constrained Optimization problems
 - Tree-search techniques
 - Metaheuristics
 - Adversarial Search: two players games, games with uncertainty
- Nature-inspired computing and Swarm intelligence
 - Evolutionary computation
 - Ant algorithms

Contents (2/2)

- Decision support systems and technologies
 - Knowledge representation
 - Reasoning
 - Expert systems
- Planning (basics)
- Machine learning
 - Basics of:
 - Neural networks
 - Decision trees
- Introduction to Complex systems

Study materials

- Textbook:
 - **Russell, Norvig.** *Artificial intelligence: A modern approach*, **2nd edition. Pearson/Prentice Hall.**
 - Also edition in Italian, 2 vols (2nd used partially in this course)
- Course website:
www.apice.unibo.it/xwiki/bin/view/Courses/AI0910
- Slides and other resources available at AMS Campus.