

# Artificial Intelligence: Course outline (2010/2011)

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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/AI1011](http://www.apice.unibo.it/xwiki/bin/view/Courses/AI1011)
- Slides and other resources available at AMS Campus.