

- Faculté des sciences
- www.unine.ch/sciences

Intelligence artificielle (3IN1007)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Bachelor en biologie	Cours: 2 ph Exercice: 2 ph	Voir ci-dessous	6
Bachelor en mathématiques	Cours: 2 ph Exercice: 2 ph	Voir ci-dessous	6
Bachelor en science des données	Cours: 2 ph Exercice: 2 ph	Voir ci-dessous	6
Bachelor en systèmes naturels	Cours: 2 ph Exercice: 2 ph	Voir ci-dessous	6
Master en informatique	Cours: 2 ph Exercice: 2 ph	Voir ci-dessous	6

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Printemps

Equipe enseignante

Prof. Christos Dimitrakakis

Contenu

This course will focus on algorithms and models for Artificial Intelligence. We will concentrate mainly on the decision making, rather than the learning, side of artificial intelligence. Learning is already addressed in statistics courses, as well as the machine learning course in the final year.

The philosophy of this course is as follows:

- We give example problems.
- We use theory to explain and generalise from those examples to general problems.
- We describe algorithms to solve general problems.
- We implement algorithms to solve specific examples.

In general, the course will start from the simplest problems and slowly progress to the more complex ones.

References:

- Artificial Intelligence: Foundations of Computational Agents.
<https://artint.info/>
- Artificial Intelligence: A Modern Approach

Detailed syllabus:

1. Agents: preferences, states, actions and beliefs
2. Deterministic problems: Search
3. Dynamic programming, Branch and Bound
4. Constraint Programming
5. Logical reasoning
6. Probabilistic reasoning
7. Expected Utility Theory
8. Markov Decision Processes
9. Zero-Sum Games and Linear Programming
10. Introduction to machine learning (time-permitting)
11. Reinforcement learning (time-permitting)

URLs	1) https://artint.info/ 2) https://github.com/olethrosdc/AI_BSc
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Forme de l'évaluation

- Group project (40%)
- Exam (60%)

Documentation

- Source code
- Course notes
- Course book

Pré-requis

- Python
- Linear Algebra (vector spaces, matrices)
- Calculus (limits, differentiation, integration)
- Probability (elementary)

Forme de l'enseignement

2 h. de cours + 2h exercices.
Début des cours à 8h45

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