## Intelligence artificielle

#### Lecturer

Tom LENAERTS (Coordinator)

Course mnemonic INFO-F311

**ECTS credits** 5 credits

Language(s) of instruction French

**Course period** First term

Campus Plaine

### Course content

This course will allow students to learn about the basics of artificial intelligence. Four themes will be covered,

- > Search and planning; covering topics such as informed and uninformed search, local research, games and adversarial search.
- > Probabilistic reasoning; covers topics such as Bayesian networks and Markov models.
- > Decision-making under uncertainty; with topics like Markov Decision Processes and Reinforcement Learning.
- > machine learning; with topics like naive Bayes, regression, perceptrons and neural networks.

# Objectives (and/or specific learning outcomes)

With this course, students should have enough technical knowledge and skills to work on Al-related projects and successfully complete Al-related courses in the Master CS program at ULB and other universities.

### Pre-requisits and co-requisits

#### Pre-requisites courses

INFO-F203 | Algorithmique 2 | 5 crédits

#### Required knowledge and skills

Programming, algorithmics and standard mathematics knowledge obtained in the first Bachelor year.

## Teaching method and learning activities

Theoretical sessions (24h) and exercises (24h) and five (one optional) projects (60h).

- > The theory session is each time 1 hour followed by a 1-hour exercises session, and this twice per week.
- > The exercises are organised after each 1hour theory session, where students will solve Ai problems related to each part of the course.
- > The project consists of five programming assignments that will be provided during the year at different intervals. They will cover the main themes of this course.

## References, bibliography and recommended reading

This course is directly based on AI - a Modern Approach, 4th edition [http://aima.cs.berkeley.edu/global-index.html] . There are both an English and French version of this book. You can also get access to an online copy via this link [https://www.pearson.fr/book/?gcoi=27440100705580].

the ULB library [https://bib.ulb.be/fr/bibliotheques/bst] also has 4-5 copies of this book available.

#### Course notes

Université virtuelle

### Other information

#### Place(s) of teaching

Plaine

### Evaluation method(s)

Project and written examination

#### Evaluation method(s) (additional information)

- The exam consists of a series of exercises/problems/ questions seen in the practical sessions of the course. On UV, a set of exercises with solutions is provided which contains sample exam questions.
- Projects are implementations of different parts of the course. Last year, this consisted of implementations in a PacMan environment of search algorithms, adversary algorithms, probabilistic models, reinforcement learning agents, and machine learning agents. While the type of projects will be the same, the AI environment may change.

## Determination of the mark (including the weighting of partial marks)

The final course grade is calculated in a conditional manner as follows.

If the exam mark and the total project mark are each 10/20 or more:

- > 60% of the final mark is obtained on the exam and
- > 40% of the total mark obtained on the projects

If the grade on the exam or of the projects is less than 10/20, the lower grade is used as final score.

Main language(s) of evaluation

Other language(s) of evaluation, if applicable English and Dutch

## Programmes

## Programmes proposing this course at the faculty of Sciences

BA-INFO | Bachelor in Computer science | unit 3