



# Faculté des sciences appliquées

**FSA**

INGI2262 **Intelligence artificielle : Apprentissage et reconnaissance**

[30h+30h exercices] 5 credits

This course is taught in the 1st semester

**Teacher(s):** Yves Deville, Pierre Dupont (coord.), Marco Saerens  
**Language:** english  
**Level:** 2nd cycle course

## Aims

- To understand and apply standard techniques to build computer programs that automatically improve with experience
- To assess the quality of a learned model for a given task
- To assess the relative performance of several learning algorithms
- To justify the use of a particular learning algorithm given the nature of the data, the learning problem and a relevant performance measure
- To use, adapt and extend learning software

## Main themes

- Learning as search, inductive bias
- Combinations of decisions
- Loss function minimization, gradient descent
- Performance assessment
- Instance-based learning
- Probabilistic learning
- Unsupervised classification

## Content and teaching methods

- Concept learning, Generalization as Search, Version Space
- Decision trees
- Multilayer Perceptrons
- Quality measures, Confidence intervals, Hypothesis testing
- K-Nearest Neighbors
- Bayesian Learning, Naïve Bayes
- Clustering techniques

Teaching method: lectures (theory), simulations on real data, extensions of learning software, problem based learning

## Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

- Prerequisites:
  - (1) INGI 2261 Artificial Intelligence: representation and reasoning
  - (2) Basic knowledge in probability and statistics
- Reference book:
 

Machine Learning, Tom Mitchell, McGraw Hill, 1997
- Evaluation:
 

Written exam
- Remarque:
 

WEB site: [http://www.info.ucl.ac.be/notes\\_de\\_cours/INGI2262/](http://www.info.ucl.ac.be/notes_de_cours/INGI2262/)

**Other credits in programs**

<b>ECGE3DS/IG</b>	Diplôme d'études spécialisées en économie et gestion (informatique de gestion - Master in Information Systems)	(5 credits)	
<b>FSA3DS/IN</b>	Diplôme d'études spécialisées en sciences appliquées (informatique)	(5 credits)	
<b>INFO22</b>	Deuxième année du programme conduisant au grade d'ingénieur civil informaticien	(5 credits)	Mandatory
<b>MAP23</b>	Troisième année du programme conduisant au grade d'ingénieur civil en mathématiques appliquées	(5 credits)	