


 Faculty of Applied Sciences

INGI3637 Logics applied to artificial intelligence

[30h] 3 credits

This course is taught in the 2nd semester

Language: French

Level: Third cycle

Aims

Knowledge representation is one of the main topics in Artificial Intelligence. If we want to write a program that is efficient in a given context, we need to provide it with a thorough knowledge of this context. The problem of representation lies mainly in determining the most adequate formalism for representing knowledge and the most efficient methods for handling these formalisms. It is at that very point that a particular representation, namely the languages of formal logic, comes in. Most of these languages belong to a class of logic languages called modal logic.

Main themes

The aim of the course is to present a systematic view of syntax, semantics and axiomatic systems of modal logic and to show how different logics used in Artificial Intelligence can be obtained from particular interpretations of modal logic. The main logics considered are :

- Deontic logic
- Epistemic logic
- Temporal logic
- Multivalued logics
- Intensional logic
- Modal predicate logic
- Non monotone logic
- Default logic

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

Recommended references :

D. Gabbay and F. Guenther,

Handbook of Philosophical Logic, 4 volumes, D. Reidel.

D. Gabbay, C. Hogger and J. Robinson,

Handbook of Logic in Artificial Intelligence, 5 volumes, Clarendon Press.

A. Thayse,

A Logic Based Approach to Artificial Intelligence, 3 volumes, Wiley.