UCL Université catholique de Louvain

LINGI2264

2010-2011

Automated reasoning

5.0 credits	30.0 h + 15.0 h	1q

Teacher(s) :	Pecheur Charles ;
Language :	Anglais
Place of the course	Louvain-la-Neuve
Inline resources:	> http://www.icampus.ucl.ac.be/claroline/course/index.php?cid=INGI2264
Prerequisites :	INGI 2261 (Artificial Intelligence), or equivalent foundations in logics and artificial intelligence.
Main themes :	-- Automated reasoning -- Reasoning based on propositional logic: model generation, Davis Putnam, ... -- Reasoning based on classical logic: resolution, array methods, ... -- Reasoning with equality theory: paramodulation, unification, rewriting, ... -- Reasoning based on induction -- Common automated reasoning systems -- Applications: modeling and solving of problems using automated reasoning methods
Aims :	Students completing successfully this course will be able to -- explain basic technics and theoretical bases used in automated reasoning -- describe respective advantages of various types of logics, especially for their use in automated reasoning -- apply wisely technics and methods of automated reasoning -- use current and representative automated reasoning systems -- develop applications using methods of automated reasoning Students will have developed skills and operational methodology. In particular, they have developed their ability to: -- gather information about the tools available in one area, -- make a clear and comprehensive presentation of a software, -- describe a situation, model and analyze it using an appropriate tool. *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Evaluation methods :	-- Assignments and presentation of another tool (50% of the final grade) -- Oral exam (50% of the final grade)
Teaching methods :	Lectures: learn AR foundations -- Theoretical bases, logics -- Basic techniques, advantages and shortcomings Labs: apply two AR tools -- 2 assignments with Alloy and Maude introduced by exercises -- Learn to apply tools, develop applications based on tools Reading: discover other AR tools -- Each student presents one to the class
Content :	-- Introduction -- Propositional logic -- Binary decision diagrams -- First-order logic -- Alloy Foundations -- Equality -- Maude Foundations -- First-order Theories -- Beyond First-ordre Logic
Bibliography :	-- No mandatory reference book (Many suggested reference books!) -- Slides and documents online
Cycle and year of study :	> Master [120] in Computer Science and Engineering > Master [120] in Computer Science

Faculty or entity in charge:	INFO