UCL Université catholique de Louvain

LINGI1122

2014-2015

Program conception methods

5.0 credits	30.0 h + 30.0 h	2q

Teacher(s) :	Vander Meulen José ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	> http://icampus.uclouvain.be/claroline/course/index.php?cid=INGI2122
Prerequisites :	Within SINF1BA : LSINF1225 Within FSA1BA : LFSAB1101, LFSAB1102, LFSAB120& mp;, LFSAB1202, FSAB1301, LFSAB1401
Main themes :	-- Methods to design and prove programs -- Program transformations and techniques used to improve the efficiency -- Program schemes and problem classes
Aims :	Given the learning outcomes of the "Bachelor in Engineering" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes: -- AA1.1, AA1.2 -- AA2.4, AA2.7 Given the learning outcomes of the "Bachelor in Engineering" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes: -- S1.I5 -- S2.2-3 Students completing successfully this course will be able to -- imagine a correct and efficient algorithm to solve a given problem -- create and specify the design for a software product using an accepted program design methodology and appropriate design notation -- demonstrate the exactness of complex algorithms Students will have developed skills and operational methodology. In particular, they have developed their ability to -- use a rigorous approach to ensure the correctness of the result, using mathematical tools *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 :	In June, the final mark will consist of continuous assessment (25%) and the examination (75%). In September, the final mark will be based only of the examination (100%).
Teaching methods :	-- Lectures every week -- Practical exercises in which students apply in simple situations the concepts described in the lectures -- Project to practice techniques in the case of a larger application
Content :	-- Methods to design and prove programs : invariant methods, wp calculus, induction on structures. -- Program transformations and techniques used to improve the efficiency -- Program schemes and problem classes: global research schemes (backward path, selection and evaluation, binary research), local research schemes (voracious strategy; gradient research, simulated annealing), structural reduction schemes (split to reign, dynamic programming, relaxation, constraints).

Bibliography :	-- textbook online -- statement of exercises online
Other infos :	Background : -- SINF1225 experience in small-software programming -- SINF1121algorithms and data structures -- INGI1101 logical reasoning and reasoning by induction
Cycle and year of study :	> Master [120] in Agricultural Bioengineering > Master [120] in Environmental Bioengineering > Master [120] in Forests and Natural Areas Engineering > Master [120] in Chemistry and Bio-industries > Preparatory year for Master in Computer science > Bachelor in Engineering > Bachelor in Economics and Management > Bachelor in Mathematics > Bachelor in Computer Science
Faculty or entity in charge:	INFO