LINGI2355

2010-2011

Software requirements & architecture

5.0 credits	30.0 h + 15.0 h	2q

Teacher(s) :	Van Lamsweerde Axel ;
Language :	Anglais
Place of the course	Louvain-la-Neuve
Inline resources:	> http://www.info.ucl.ac.be/courses/INGI2355/
Prerequisites :	-- Know and have experience of software development methods based on models (as taught in the course INGI2251 Software Engineering: Development Methods)
Main themes :	-- Requirements engineering -- Specification techniques -- Analysis techniques ; risk analysis. -- Behavioral software models -- Architectural design -- Tool support for model specification and analysis
Aims :	Students completing successfully this course will be able to -- Explain, and apply more systematic methods and techniques for engineering complex software intensive systems, in particular, for elaborating requirements, designing architectures, validating and verifying software models. -- Explain and discuss the problems and solutions specific to mission-critical systems, in particular, security-critical and safety-critical applications. Students will have developed skills and operational methodology. In particular, they have developed their ability to -- study of relevant bibliography, -- synthesize and debate scientific concepts and techniques, -- personally contribute to a deep understanding of scientific questions, -- participate to research group discussions. *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 :	-- quality of presentations -- level of understanding of the exposed topics -- active participation in discussions following the presentations -- quality solutions for exercises
Teaching methods :	-- 4 hours of lecture by the teacher during the first week of the semester to launch the thematic -- presentation by the students(groups of 2) based on the book (2 presentations per group) -- for each topic, exercises in the book the groups which didn't present them
Content :	-- Requirements engineering: requirements elicitation, evaluation, specification, analysis and evolution. -- Specification techniques --state-based techniques; temporal, deontic, epistemic logics. -- Analysis techniques --model validation by animation; algorithmic and deductive verification of model properties; risk analysis. -- Behavioral software models --construction, synthesis, analysis. - Modeling and analysing security aspects. -- Architectural design --architectural description languages, pattern languages, self-healing systems. -- Tool support for model specification and analysis: LTSA, SCR toolset, SpecTRM, Alloy, VDMTools, RAISE tools, B, SPIN, NuSMV, PVS, SteP, etc.
Bibliography :	-- A. van Lamsweerde, Requirements Engineering: from systems goals to UML models to software specifications, Wiley, 2009 -- documents explaining how to make "good slides" which are high quality supports ofr an oral presentation
Cycle and year of study :	> Master [120] in Computer Science and Engineering > Master [120] in Computer Science
Faculty or entity in charge:	INFO