UCL Université catholique de Louvain

LELEC2532

2014-2015

Design and Architecture of analog electronic systems

5.0 credits	30.0 h + 30.0 h	2q

Teacher(s) :	Legat Jean-Didier ; Flandre Denis ;
Language :	Anglais
Place of the course	Louvain-la-Neuve
Inline resources:	> http://moodleucl.uclouvain.be/enrol/index.php?id=934
Main themes :	In the ELEC et ELME masters, after the course LELEC2531 oriented on digital electronics, and in parallel with the project of electronics system realization (LELEC2103) and before the courses of integrated circuit synthesis (2nd year ofMs), this course LELEC2532 sytudies the main analog circuits and systems used in the global fonctionality of an embedded system. The component families, their implementations and factors of merit are defined and compared.
Aims :	Contribution of the course to the program objectives (N°) Axe 1 (1.1, 1.2, 1.3), Axe 2 (2.3), Axe 3 (3.1), Axe 5 (5.2, 5.3, 5.4, 5.5, 5.6), Axe 6 (6.1, 6.3, 6.4) Specific learning outcomes of the course At the end of this course, the student will be able to : discover the main classes of analog electronics circuits such as operational amplifiers, voltage references, D/A and A/D converters, oscillators, filters, phase locked loops, memories etc' analyze their architecture, understand their behavior, and determine, compute and simulate their characteristics *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 :	The evaluation consists of, on one hand, the presentation of a chapter of the 1st part of the course (theory, exercices, simulations) prepared by a group of 4 students (30 min. each) on the basis of the book by S. Baker and personal examples, and on the other hand, a written exam on the 2nd part of the course (theory and related exercices)
Teaching methods :	Based on standard classes, inverted classes and practical exercice sessions.
Content :	-- Usual analog circuits -- CMOS operational amplifiers -- Output stages -- Signal generation -- Noise -- D/A and A/D converters -- Telecommunication circuits -- Active filters -- Oscillators -- Mixers -- PLLs
Bibliography :	-- Analysis and design of analog integrated circuits, Gray, Hurst, Lewis and Meyer, John Wiley 2001 -- CMOS Circuit Design, Layout and Simulation, 3rd edition (IEEE Press Series on Microelectronic Systems) by R. Jacob Baker -- CMOS : Mixed-Signal Circuit Design, 2nd edition by R. Jacob Baker -- Microelectronic Circuits by Sedra/Smith - Oxford University Press

Cycle and year of study :	> Master [120] in Electro-mechanical Engineering > Master [120] in Electrical Engineering
Faculty or entity in charge:	ELEC