UCLouvain

linfo1140

2021

Electronic basics of computing

5.00 credits	30.0 h + 30.0 h	Q2

Teacher(s)	Legat Jean-Didier ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	This course assumes that the ability to deal with simple problems via mathematical equations is acquired. This approach will be expanded here to problems related to electricity and electronics. Basic notions in physics (such as the existence of forces, the notion of energy) are also supposed to be known as taught in secondary school.
Main themes	• Basic laws of electricity: electrostatic, magnetism (including an introduction to constant-order 1st order differential equations) • Electrical circuits (Sources, Kirchhoff Laws, ...) • Simulation of electrical circuits using dedicated software (p.e. Spice) • MOS transistor • Logic gates and their implementation in MOS (combinational circuits and basic sequential circuits) • Memory Points (SRAM, DRAM, Flash)
Learning outcomes	**At the end of this learning unit, the student is able to :** Given the learning outcomes of the "Bachelor in Computer science" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes: • S1.G4 • S2.2, S2.4 Students who have successfully completed this course will be able to : 1 • explain the basic laws of electricity and electrical circuits • solve simple electrical circuits by using the fundamental laws • simulate simple electrical circuits using a software and interpret the results • characterize simple electrical circuits by explaining their operation • explain the operation of the MOS transistor as a logic switch • describe, from the combination of MOS transistors, the operation and the implementation of the basic logic gates as well as the main memory points
Evaluation methods	An oral or written exam (depending on the session) will be organized, in addition to a possible ongoing evaluation. Details are defined on the course website.
Inline resources	https://moodleucl.uclouvain.be/course/view.php?id=4333
Faculty or entity in charge	INFO

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor in Computer Science	SINF1BA	5		🔍