

5.0 credits

30.0 h + 30.0 h

2q

Teacher(s) :	Janvier Danielle ; Craeye Christophe ;
Language :	Anglais
Place of the course	Louvain-la-Neuve
Inline resources:	http://icampus.uclouvain.be/claroline/course/index.php?cid=ELEC2580
Prerequisites :	-- Microwave course (LELEC2700) -- Electronics courses -- Antenna course (LELEC2910) or equivalent
Main themes :	This course is a part of the "Microwaves" orientation in the Master in Electricity. LELEC2580 is dedicated to design of active emitting and receiving front-ends at RF and microwave frequencies.
Aims :	- A1.1, A1.2, A1.3, - A2.1, A2.2, A2.4, - A3.2, - A4.1, A4.2, - A5.2, A5.3, A5.4, A5.5, - A6.1 After this course the students will be able to : Design, simulate, draw the layout and measure the various elements of an RF or microwave front end: o low-noise amplifier o Filters and matching circuits o Mixer o Oscillator o Active antenna <i>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".</i>
Evaluation methods :	The examination is a project that is evaluated on the basis of a written report and a presentation
Teaching methods :	The course includes : 12 theoretical lectures Training modules with tutorial on ADS and IE3D softwares A project, using ADS design program of Agilent, where each student individually has to design, simulate and measure an active device.
Content :	The course will provide students with necessary knowledge and tools for designing RF and microwave active circuits. Topics addressed include: -- Generalized S-parameters and design of matching circuits -- Microwave models for transistors (equivalent circuits and noise parameters) -- Design methodology for microwave amplifiers -- Microwave and RF oscillators -- Microwave and RF mixers -- Beamforming architectures, narrow-band and UWB -- Real-time processing for multiple-antenna systems -- Applications to radar, RFID and MIMO systems
Bibliography :	-- Slides available on iCampus -- Reference textbooks available in UCL public library

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