LELEC2910

2015-2016

Antennas and propagation

5.0 credits	30.0 h + 30.0 h	1q

Teacher(s) :	Craeye Christophe ; Janvier Danielle ;
Language :	Anglais
Place of the course	Louvain-la-Neuve
Inline resources:	Moodle > http://moodleucl.uclouvain.be/course/view.php?id=8229
Main themes :	This course is a part of the "Telecommunications" orientation in the Master in Electrical Engineering. LELEC2910 is dedicated to the electromagnetic aspects of wireless communications, more specifically to the antenna technology and microwave propagation theory.
Aims :	With respect to the AA referring system defined for the Master in Electrical Engineering, the course contributes to the development, mastery and assessment of the following skills -- AA1.1, AA1.2, AA1.3 -- AA2.1, AA2.2, AA2.4 -- AA3.1 -- AA4.1 -- AA5.5, AA5.6 -- AA6.1, AA6.3 At the end of the course, the student will be able to : -- Explain the fundamental properties characterizing an emitting and receiving antenna and calculate its characteristic parameters -- Calculate the radiated field and the radiation pattern of antennas, antenna arrays, linear and aperture antennas. -- Describe and calculate the influence of the troposphere, the ionosphere and the ground on the propagation of electromagnetic waves. -- Write the radar equation and describe the radar. -- Calculate a link budget, taking into account the various propagation effects and the signal-to-noise ratio, for a terrestrial and earth-space link. *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 students have a written examination, based on the objectives described above. It is a closed-book exam. The evaluation of the project is a report and a presentation, individual or for a group of 2 students.
Teaching methods :	The course is organized in -- 12 courses of 2h -- 10 supervised exercises of 2h -- A project for the development of an antenna or a propagation model (1 or 2 students).
Content :	-- Antenna theory --

	Modeling of antenna array -- Radiation from linear distributions -- Radiation from apertures -- Propagation for terrestrial links -- Earth-space propagation -- Propagation through the troposphere and the ionosphere -- Radar equation
Bibliography :	Supports : -- Syllabi available on Moodle -- Slides available on Moodle -- Reference books available at the Science and Technology Library
Faculty or entity in charge:	ELEC

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Master [120] in Electrical Engineering	ELEC2M	5	-	