

4.0 credits	40.0 h	1q
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Teacher(s) :	Bodart Magali ; Van Moeseke Geoffrey ;
Language :	Français
Place of the course	Bruxelles
Prerequisites :	<i>The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.</i>
Aims :	<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 evaluation is a written exam during the term. The student is allocated a global grade to be deliberated by the teachers and based on the acquisition of the different LO for the four types of comfort.
Teaching methods :	The teaching is based on lectures, while facilitating the interactions between teachers and students. The student will be encouraged to work autonomously, still being framed by applied exercises proposals and by readings as preamble or extension of the lectures.
Content :	<p>The principle applied to this Learning Unit is based on an identical approach for each type of comfort discussed. That is, starting with the learning of physics notions required to understand each particular domain of comfort, then teaching the metrics and indicators used to qualify and quantify comfort and the strategies to be used to provide it. Finally a description of the equipment used to support " natural and sustainable " techniques, in the context of " nearly-zero energy buildings " is given.</p> <p>Visual comfort The Learning Unit starts with a description of the basic physics notions applying to photometry, required to define the metrics used for lighting (daylight or artificial). The parameters of perception and visual comfort are then discussed. Once these notions are acquired, the strategies of daylighting are described. Finally, the techniques of electric lighting as a complement to daylighting are discussed.</p> <p>Acoustical comfort This part of the Learning Unit starts with the definition of the basics notions of acoustics, together with the reminder of the essential mathematics notions as a preamble to the study of perception and propagation of sound. The study of the phenomenon of echo and reverberation are then used as a basis to the study of acoustical correction, which leads to the discussion of the sound absorption techniques at stake in a building. The second large part linked to the acoustical comfort is the study of acoustical insulation against airborne noises and the propagation of impact sounds. The protection techniques regarding these two types of noises are then studied, with the background of European regulations.</p> <p>Respiratory comfort This part starts with the inventory of the sources of air pollution in the buildings and justifies a design strategy based on the avoidance of the sources as a preamble to the dilution of the pollutants. The standards for ventilation systems dimensioning are then discussed. The ventilation appliances are reviewed based on their global logic (natural systems, mechanical simple or mechanical ventilation with heat recovery), with more emphasis on the techniques of air diffusion in the space.</p> <p>Thermal comfort This section addresses the currently held debates about the scientific definition of thermal comfort (thermodynamic models, adaptative, allaesthesia) and the parameters involved. A reminder of the notions of heat transfer is proposed as a base to the discussion about the selection of thermal energy emitters, designed for heating or cooling (radiating/convective, inert/reactive). The norms of heating- and cooling loads dimensioning are presented, followed by the impact of the selection of the thermal emitter on the heat production and distribution systems, which are briefly sketched.</p>
Bibliography :	The students have a syllabus for each teacher. The PowerPoint presentations are put at their disposal after each lecture.
Faculty or entity in charge:	LOCI

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Bachelor in architecture (Bruxelles)	ARCB1BA	4	LBARC1260	