

In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

4 credits

20.0 h + 30.0 h

Q2

Teacher(s)	Sgambi Luca ;
Language :	French
Place of the course	Tournai
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>
Main themes	This teaching unit forms part of the continuous process of learning about structures and their behaviour. <ul style="list-style-type: none"> <li>• Eurocodes</li> <li>• Loads, overloads and combinations of actions and stress</li> <li>• Ultimate and serviceability limit states</li> <li>• Structures in masonry</li> <li>• Structures in concrete and reinforced concrete</li> </ul>
Aims	<p><b>Specific learning outcomes:</b> By the end of the course, students will be able to</p> <ul style="list-style-type: none"> <li>• understand and put forward a structural logic for a building.</li> <li>• understand and carry out lowering the loads in a building to the foundations.</li> <li>• understand the behaviour of a material according to its environment.</li> <li>• understand the approach to structures in reinforced concrete.</li> <li>• understand the technical documents linked to structures in reinforced concrete.</li> </ul> <p><b>Contribution to the learning outcomes reference framework:</b></p> <p>1 With regard to the learning outcomes reference framework of the Bachelor's degree in Architecture, this teaching unit contributes to the development, the acquisition and the assessment of the following learning outcomes:</p> <p><b>Make use of other subjects</b></p> <ul style="list-style-type: none"> <li>• <i>Make use of other subjects to ask questions about the design and implementation of an architectural project</i></li> </ul> <p><b>Use the technical dimension</b></p> <ul style="list-style-type: none"> <li>• <i>Observe and assess the main construction principles of a building</i></li> <li>• <i>Be able to apply the various basic technical principles in a producing a work of architecture</i></li> </ul> <p>-----</p> <p><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></p>
Evaluation methods	<p><b>Due to the COVID-19 crisis, the information in this section is particularly likely to change.</b></p> <p>Each student's final rating is the average of two ratings. The first evaluation concerns a structural design work on a design problem assigned by the teacher at the beginning of the course. This work can be done in groups. The second evaluation concerns a written examination on the topics carried out in the classroom. On both assessments, the teacher sets a minimum threshold of 6/20 below which the student cannot have a positive final assessment.</p>
Teaching methods	<p><b>Due to the COVID-19 crisis, the information in this section is particularly likely to change.</b></p> <p>Lecture in the auditorium.</p>
Content	<p><b>The concrete</b></p> <p>General, history and applications of concrete</p> <p>Concrete components (aggregates, water, binders, admixtures); mixture composition, requirements and implementation, technical characteristics</p> <p>Calculations and reinforcement</p> <p>- the column</p>

	<ul style="list-style-type: none"> <li>- the beam</li> <li>- principles for slabs, stairs, consoles</li> <li>- technological details</li> <li>- prestressing</li> </ul> <p>Exercices - implementation</p> <p><b>Hyperstatic structures</b></p>
Bibliography	<p>Allen E., Zalewski W., Form and Forces, Designing efficient, expressive structures, Boston, Wiley, 2010</p> <p>Muttoni A., L'art des structures, Lausanne, PPUR, 2004</p> <p>Salvadori M., Comment ça tient ?, Editions Parenthèses, 2005</p> <p>Studer M-A. &amp; Frey Fr., Introduction à l'analyse des structures, Lausanne, PPUR, 1997</p> <p>Schodek D., Bechthold M., Structures, sixth edition, Pearson Prentice Hall, 2008</p> <p>Gordon J., Structures et matériaux, Pour la science, Belin, 1994</p>
Faculty or entity in charge	LOCI

**Programmes containing this learning unit (UE)**

Program title	Acronym	Credits	Prerequisite	Aims
Bachelor in Architecture (Tournai)	ARCT1BA	4	LTARC1261 AND LTARC1262	