

4.0 credits	45.0 h + 15.0 h	2q
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Teacher(s) :	Faux Pascaline ; Diependael Bernard ; Evrard Cédric ;
Language :	Français
Place of the course	Tournai
Inline resources:	The PowerPoint used in set theory and exercises text.
Main themes :	-- Conditions for structure equilibrium : Hypotheses of statics, systems of forces and couples, supports and support reactions -- Graphostatics : Graphic methods applied to statics issues, as a tool for the representation of forces and the good comprehension of their effects on the structure -- Internal forces and stresses : Determination of normal and shear forces, bending moment and consequently linked normal and shear stresses -- Strength of materials : Behaviour laws and physical properties -- Introduction to design and evaluation of a structures : As a deduction of geometrical parameters, load solicitations and the chosen material
Aims :	This cursus introduces to architectural design of bearing structures. At the conclusion of this education, students must acquire the following knowledge : - Basic principles of statics and the strength of materials - Transposition of architectural elements into abstract representation - Graphic and analytic calculations related to structures So, the students will be able to : - Analyse structures with a critical mind and design structural forms : How they work, the propagation of forces, the constitutive elements arrangement, their proportions - Efficiently interact with structural design engineers <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 :	Theory : multiple choice. Exercises: resolution similar to those seen in sessions.
Teaching methods :	Theory : lectures in audience. Exercises : sessions in small groups.
Content :	Theory : real or simulated study case to illustrate the theory and its applications. -- Footbridge -- Triangulated carpentry -- Frame structure -- Cantilever : Building on a vertical wall -- Flexion : beams on two supports Exercises : applying mathematical formulas -- Decomposition of forces -- Reactions : graphic (Varignon) and analytical -- Mesh : graphic (Cremona) and analytical (Ritter) -- Isostatic beams: graphic (integration) and analytical (describing the moment) -- Center of Gravity -- Moment of inertia

<p>Bibliography :</p>	<p>-- Meistermann A., Basic ' Systèmes porteurs, Basel, Birkhäuser, 2007 -- Allen E., Zalewski W., Form and Forces, Designing efficient, expressive structures, Boston, Wiley, 2010 Muttoni A., L'art des structures, Lausanne, PPUR, 2004 -- Studer M-A. & mp; Frey Fr., Introduction à l'analyse des structures, Lausanne, PPUR, 1997 -- Nelson E.W.& mp; McLeanW.G., Engineering Mechanics, statics and dynamics Mc Graw 'Hill 1962</p>
<p>Cycle and year of study :</p>	<p>> Bachelor in Architecture(Tournai)</p>
<p>Faculty or entity in charge:</p>	<p>LOCI</p>