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| 4.0 credits | 22.5 h + 22.5 h | 2q |
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| Teacher(s) :         | Soares Frazao Sandra ; Latteur Pierre ;  |
| Language :           | Français   |
| Place of the course  | Louvain-la-Neuve   |
| Inline resources:    | <a href="http://icampus.uclouvain.be/claroline/course/index.php?cid=LFSAB1510">http://icampus.uclouvain.be/claroline/course/index.php?cid=LFSAB1510</a>  |
| Prerequisites :      | Cours de mécanique des structures LAUCE1181 BAC13, Q1  |
| Main themes :        | <p>Lab tests on timber and steel ;<br/>                     Structural design ;<br/>                     Timber connections design and calculation;<br/>                     Execution plans ;<br/>                     Construction (by the students) of a real structure ;<br/>                     Loading of the structure ;<br/>                     Oral presentations and final report.<br/>                     Examples of past projects :<br/>                     --<br/>                     Design, calculation, execution and testing of a 3D structure able to suspend a load of 10 students (see: 6 minutes film on : <a href="http://podcast.uclouvain.be/ciQk8VjSmW">http://podcast.uclouvain.be/ciQk8VjSmW</a>);<br/>                     --<br/>                     Design, calculation, execution and testing of a 6 m span deployable footbridge able to stand the self-weight of 12 students</p> |
| Aims :               | <p>Regarding the learning outcomes of the program of Bachelor in Engineering, this course contributes to the development and the acquisition of the following learning outcomes:LO1, LO2-3, LO4, LO5, LO6<br/>                     The project also allows the acquisition of large competences in the field of civil engineering, through several interactions with the lab's technical staff<br/> <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>The evaluation is based on :<br/>                     The quality of written reports (structure of the text, spelling, grammar, justification of the choices and the design process, synthesis of the lab tests, analysis of the software results, connections design) ;<br/>                     Originality, creativity and aesthetics of the structure ;<br/>                     Deployability of the structure ;<br/>                     Success of the final load test ;<br/>                     Individual exam.<br/>                     A bonus of 2 points over 20 will be given to the group :<br/>                     With the most creative or aesthetic structure;<br/>                     Who will mount the structure within the shorter time ;<br/>                     Who will built the lightest structure.</p>   |
| Teaching methods :   | <p>Activities will be organized as followed :<br/>                     A few theoretical courses ;<br/>                     Project learning (groups of 3 to 4 students) ;<br/>                     Work in the laboratory with the technicians, professors and assistants.</p>  |
| Content :            | <p>Projet presentation - Formation of the groups (3 to 4 students) ;<br/>                     Course over « mechanical properties of materials »<br/>                     Presentation of the testing machines (lab) ;<br/>                     Lab tests : timber and steel cables ;<br/>                     Statistical analysis of the test results ;<br/>                     Presentation of design software : ISSD and SCIA ;<br/>                     Exercises with software SCIA ;<br/>                     Pre-design of the structure ;<br/>                     Course over timber connections ;<br/>                     Calculation of the structure by the students ;<br/>                     Presentations of the structures (each group) ;<br/>                     Building of the structure ;<br/>                     --</p>   |

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|                                     | Mounting, tests and loading of the structure.   |
| <b>Bibliography :</b>               | Documents on iCampus<br>'Calculer une structure 'De la théorie à l'exemple', P. Latteur<br>« Introduction à l'analyse des structures », M.A. Studer et F. Frey<br>Other documents and slides related to timber structural design  |
| <b>Other infos :</b>                | This course is part of the set of courses « Project 4 » of the programme of bachelor in engineering. Projects 4 share common transversal objectives, but exist under different versions oriented towards specific disciplinary objectives, corresponding to the majors/minors of the programme. Each student chooses either the project related to his/her major or to his/her minor (if available) |
| <b>Faculty or entity in charge:</b> | GC  |

| <b>Programmes / formations proposant cette unité d'enseignement (UE)</b> |        |         |           |   |
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| Intitulé du programme  | Sigle  | Credits | Prerequis | Acquis d'apprentissage  |
| Bachelor in Engineering  | FSA1BA | 4       | -         |  |