



3.00 credits

20.0 h

Q2

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| Teacher(s) | Vassart Olivier ; |
| Language : | English > French-friendly |
| Place of the course | Louvain-la-Neuve |
| Prerequisites | It is advised to have a grounding in the fundamental concepts of material resistance, structural mechanics, stability and the bases of design of steel, composite steel-concrete and reinforced concrete structures, as taught in LGCIV1022, LGCIV1031, LGCIV1023, LGCIV1032, LGCIV2033. |
| Main themes | The course concerns exceptional accidental actions by fire that can affect the structures. The themes are: - The characteristics of the action (fire); - The structural responses in thermal terms; - The principles of fire protection; The main lines of the Eurocodes prescriptions taking into account fire |
| Learning outcomes | At the end of this learning unit, the student is able to : With reference to the AA reference system of the "Master of Civil Engineering" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes: AA1.1, AA1.2, AA1.3., AA5.5 and AA5.6 More specifically, at the end of this course, the student will be able to: Fire problematic: - Describe the thermal actions associated with the development of a fire; - Know the different possible approaches for calculating and characterizing a fire; 1 - Describe the different parameters influencing the thermal behavior of materials (steel, concrete, wood) and the link with the modification of their mechanical behavior; - Describe the membrane behavior of composite steel-concrete structures in a fire situation; - Describe the steps involved in performing a fire engineering calculation on a typical building; - Know the advantages and disadvantages of the different types of fireproof design (coating, intumescent paints, Promat type materials, oversizing, etc.). |
| Evaluation methods | <ul style="list-style-type: none"> • The assessment will be done on the basis of a real situation around the calculation of a building project • Students in groups of 2 will carry out during the sessions and at home the calculation and a report on a real case. • The report will then be presented during a 30-minute session per group |
| Teaching methods | <ul style="list-style-type: none"> • Theoretical courses accompanied by presentation of case studies • Work session based on a real fire resistance calculation project |
| Inline resources | Available on Teams: Course slides and syllabus including theoretical part as well as case studies |
| Bibliography | Syllabus comprenant partie théorique ainsi que des cas d'études |
| Faculty or entity in charge | GC |

| Programmes containing this learning unit (UE) | | | | |
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| Program title | Acronym | Credits | Prerequisite | Learning outcomes |
| Master [120] in Civil Engineering | GCE2M | 3 | |  |
| Master [120] in Architecture and Engineering | ARCH2M | 3 | |  |