


3.00 credits	20.0 h	Q2
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Teacher(s)	Vassart Olivier ;
Language :	English
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)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Civil Engineering	GCE2M	3		
Master [120] in Architecture and Engineering	ARCH2M	3		