GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Design for Structural Fire Resistance (E051512)

Course size *(nominal values; actual values may depend on programme)*

Credits 3.0 **Study time 90 h**

Course offerings in academic year 2024-2025

A (semester 1)	English	Gent
B (semester 1)	English	Gent

Lecturers in academic year 2024-2025

Annerel, Emmanuel	TW14	lecturer-in-charge

Offered in the following programmes in 2024-2025	**crdts**	**offering**
International Master of Science in Fire Safety Engineering	3	A
Master of Science in Fire Safety Engineering	3	A
Postgraduate Studies in Fire Safety Engineering	3	B

Teaching languages

English

Keywords

- Structural fire design
- Fire resistance
- Eurocodes
- Fire resistance tests

Position of the course

The course provides students with practical design rules for fire resistance of structural elements, considering common building materials. The course builds upon basic structural engineering knowledge and gives insight in design for structural fire safety in accordance with current codes and standards.

Contents

Structural fire design (including design fires) according to Eurocodes 1, 2, 3 & 5

Initial competences

- Basic knowledge of structural engineering and design.
- Basic knowledge of heat transfer.

Final competences

1 Perform the structural fire design of timber, concrete and steel elements, given a fire resistance requirement, in accordance with the Eurocodes.
2 Calculate the necessary passive fire protection in accordance with Eurocodes and test standard series EN13381
3 Profoundly understand the different levels of structural fire design presented in the Eurocodes

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Seminar, Lecture, Independent work

Extra information on the teaching methods

This course consists of theory lectures and exercises.

Study material

None

References

- EN1991-1-2, EN1992-1-2, EN1993-1-2, EN1995-1-2
- EN13381: Test methods for determining the contribution to the fire resistance of structural members
- Buchanan, A., Structural Design for Fire Safety, John Wiley & Sons, 2001
- Franssen, J.-M., Vila Real, P., Fire Design of Steel Structures : Eurocode 1: Actions on Structures; Part 1-2: General Actions -- Actions on Structures Exposed to Fire; Eurocode 3: Design of Steel Structures; Part 1-2: General Rules -- Structural Fire Design, Ernst & Sohn, 2012
- Wang, Y., Performance-Based Fire Engineering of Structures, CRC Press, 2013
- Vassart, O. et al., Eurocodes: Background & Applications – Structural Fire Design – Worked examples, European Union, 2014 (http://eurocodes.jrc.ec.europa.eu/doc/2012_11_WS_fire/report/2012_11_WS_fire.pdf)

Course content-related study coaching

Counselling is offered to help students process the subject matter and attain the learning outcomes

Assessment moments

end-of-term assessment

Examination methods in case of periodic assessment during the first examination period

Written assessment

Examination methods in case of periodic assessment during the second examination period

Written assessment

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

The written examination is closed book and comprises exercises and theory questions

Calculation of the examination mark

The score results from the student's performance at the exam

Facilities for Working Students

There are no special facilities for working students