

Steel and Concrete Structures (E044610)

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

Credits 6.0 Study time 180 h Contact hrs 60.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	English	lecture	25.0 h
		seminar: coached	25.0 h
		exercises	

Lecturers in academic year 2018-2019

Van Coile, Ruben	TW14	lecturer-in-charge
Snoeck, Didier	TW14	co-lecturer

Offered in the following programmes in 2018-2019

Postgraduate Studies in Fire Safety Engineering	crdts	offering
	6	A

Teaching languages

English

Keywords

- Structural analysis
- Structural equilibrium
- Material behaviour
- Load conditions
- Statically determinate structure
- Statically indeterminate structure
- Deformation
- Restrained deformation

Position of the course

In this course students learn the essential principle of structural analysis at normal design temperatures, both for statically determinate and statically indeterminate structures. In this regards, the course links to the core competencies of the degree as defined as part of the learning competencies.

Contents

- Revision of mechanical material behaviour
- Equilibrium of structural systems (statically determinate and statically indeterminate)
- Load conditions and internal load transfer
- Deformation of structures, as calculated using integration methods, and using virtual work
- Restrained deformation and its influence on force distributions
- Thermal effects in normal design conditions (uniform temperature changes and linear temperature gradients in thermal equilibrium across the structural element).
- Introduction to safety factors and design combinations for structural design
- Introduction to common building materials

Initial competences

Basic concepts of mechanics of materials

Final competences

- 1 Determining the equilibrium and deformation of statically determinate structural systems
- 2 Determining the equilibrium and deformation of statically indeterminate structural systems
- 3 Insight in the effect of boundary conditions on the deformation and load distribution in

- the structure
- 4 Perform a load transfer
 - 5 Appraising the deformation and load distribution in the structure in case of small uniform temperature changes and linear temperature gradients across structural elements.
 - 6 Insight in the effect of material choice on structural behaviour and deformations
 - 7 Explain the use of safety factors and load combinations in design practice

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

Group work, lecture, seminar: coached exercises

Learning materials and price

Hibbeler, R.C. (2016). Mechanics of Materials (10th Edition).
Recommended reference, 30 euro, 2nd hand online

References

Course content-related study coaching

The lecturers and assistants can be contacted before or after the lectures or exercise sessions, through e-mail or after making an appointment

Evaluation methods

end-of-term evaluation

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

Written examination

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

Written examination

Examination methods in case of permanent evaluation

Assignment

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

Calculation of the examination mark

Periodic evaluation: 50%
Continuous evaluation: 50%