

# Course Specifications

From the academic year 2017-2018 up to and including the

## Statics of Structures (E044020)

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

|         |     |            |      |             |        |
|---------|-----|------------|------|-------------|--------|
| Credits | 3.0 | Study time | 90 h | Contact hrs | 30.0 h |
|---------|-----|------------|------|-------------|--------|

Course offerings and teaching methods in academic year 2018-2019

|                |       |                  |        |
|----------------|-------|------------------|--------|
| A (semester 1) | Dutch | seminar: coached | 15.0 h |
|                |       | exercises        |        |
|                |       | lecture          | 15.0 h |

Lecturers in academic year 2018-2019

|            |      |                    |
|------------|------|--------------------|
| Belis, Jan | TW14 | lecturer-in-charge |
|------------|------|--------------------|

Offered in the following programmes in 2018-2019

|  |       |          |
|--|-------|----------|
| <a href="#">Bachelor of Science in Engineering: Architecture</a> | crdts | offering |
|  | 3     | A        |

Teaching languages

Dutch

Keywords

Equilibrium, force, moment of a force, couple, resultant

Position of the course

Students are given a good understanding of how the loads are supported by a structure. A thorough knowledge of the principles of statics is achieved by many exercises and applications to practical engineering problems.

Contents

- Planar forces (vectors): Resultants and equilibrium of coplanar force systems, Determination of the reactions and the internal forces in structures, Flexible cables
- Spatial force systems (vectors): Resultants and equilibrium of spatial force systems, Determination of reactions and internal forces in spatial structures
- Friction: Kinds of friction, Determination of the equilibrium taking into account the friction forces
- Centre of gravity: definition and calculation
- Second moment of area of planar figures and revolutionary bodies; theorems of Pappus and Guldin
- Virtual work: The concept of virtual work, The method of virtual work

Initial competences

Mathematics 1 (eventually to be followed in parallel to this course)

Final competences

- 1 Calculate the reactions and the internal forces in plane and spatial isostatic structures
- 2 Calculate the equilibrium shape of a loaded cable and the corresponding tension in that cable
- 3 Verify the equilibrium taking into account friction
- 4 Calculate the centre of gravity of planar surfaces
- 5 Solve equilibrium problems with the concept of virtual work

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

Lecture, seminar: coached exercises

## Learning materials and price

R. HIBBELER, Statica, 13e edition, PEARSON, 2014. Dutch (English version also available), ca. 67,95 EUR

## References

- S. TIMOSHENKO en D. H. YOUNG - Technische Mechanica - Delta press BV, Oudewater, Nederland, Eerste druk 1967, Zevende Druk 1983 Oorspronkelijke titel : Engineering Mechanics - Mc Graw-Hill Book Company, Inc, 1936
- J. L. MERIAM - Statics - John Wiley 1 Sons, Inc., 1966

## Course content-related study coaching

teaching staff is available just before and after classes, monitorat

## 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

## Possibilities of retake in case of permanent evaluation

not applicable

## Extra information on the examination methods

During examination period: written closed-book exam. The exam consists only of applied questions (exercises).

## Calculation of the examination mark

Exercises 100%