

Course Specifications

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

Construction of Buildings (E050410)

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 2) | Dutch | seminar | 30.0 h |
| | | lecture | 30.0 h |

Lecturers in academic year 2018-2019

| | | |
|--------------|------|--------------------|
| Belis, Jan | TW14 | lecturer-in-charge |
| Boydens, Wim | TW01 | co-lecturer |

Offered in the following programmes in 2018-2019

| | crdts | offering |
|--|-------|----------|
| Bachelor of Science in Engineering: Architecture | 6 | A |
| Bachelor of Science in Civil Engineering | 6 | A |

Teaching languages

Dutch

Keywords

Building materials, construction elements, modular building, connections, general equipment, electrical equipment, concept, integration, concept support, realisation, detailing

Position of the course

The different points of view of building structures are given and analysed, based on e.g. functional demands, physical laws, technical demands. By means of a synthesis of these aspects, a principally correct concept is worked out. By logical reasoning, and taking into account other aspects (environment, economy, esthetics, comfort) the solution is worked out. Principal concepts and simplified formulas aim at a quick and efficient realisation of the concept.

Contents

- Part 1a: Concept of load-bearing building structures (in parallel with part 1b): Horizontal and vertical loads, Basics of elasticity and structural analysis, Basic building components, Building methods & horizontal / vertical global stability, Exploration of terrain and soil, Foundation techniques
- Part 1b: Technical installations with considerable spatial impact (in parallel with part 1a / part 2): Installations: generalities, Installations and durability, HVAC installations, Elevator installations
- Part 2: Construction techniques with building materials: Steel, Timber, Concrete, Masonry, Glass
- Part 3: Special constructions - variable themes, e.g.: High-rise buildings, Membrane constructions, Movable or deployable structures, Shells, Pneumatic constructions, Adaptive structures, Tensegrity

Initial competences

Statics, Physics I, Physics II, Mechanics of Materials

Final competences

- 1 Analyse and apply principles of horizontal and vertical stability of buildings.
- 2 Understanding of concepts and functioning of loadbearing constructions and building components.
- 3 Mastering basic principles of terrain, soil and foundation techniques.
- 4 Denominate and recognise well-reputed engineers and engineering offices.
- 5 Estimate the dimensions of a number of major building components by means of

- simplified formulas and rules-of-thumb.
- 6 Reason and argue the use of steel, timber, concrete, masonry and glass as building materials.
- 7 Create structural concepts and detailing in a correct way.
- 8 Understand and explain basic principles and structural consequences of HVAC and elevator installations.
- 9 Calculate basic technical installations.

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

Learning materials and price

Course notes (in Dutch), ca. 30 EUR

References

- Addis, B. Building: 3,000 Years of Design, Engineering and Construction, Phaidon
- Hegger, M, Auch-Schwelk, V, Fuchs, M, Rosenkranz, T. Construction materials manual, Birkhauser
- Herzog, T, Natterer, J, Schweizer, R, Volz, M, Winter, W. Timber Construction manual, Birkhauser
- Schittich, C, Staib, G, Balkow, D, Schuler, M, Sobek, W. Glass Construction manual, Birkhauser
- Schultz, H, Habermann, K, Sobek, W. Steel construction manual, Birkhauser

Course content-related study coaching

Evaluation methods

end-of-term evaluation and continuous assessment

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

Written examination with open questions, written examination with multiple choice questions

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

Written examination with open questions, written examination with multiple choice questions

Examination methods in case of permanent evaluation

Assignment, report

Possibilities of retake in case of permanent evaluation

examination during the second examination period is not possible

Extra information on the examination methods

During examination period: written closed-book exam, open questions and possibly (a limited series of) multiple-choice questions.

During semester:

- Architecture students: graded workshop results.
- Civil Engineering students: graded report (weekly follow-up and analysis of real construction site)

Calculation of the examination mark

The final score is determined based on the following components and weight factors:

Exam:

- Architecture students: 1/2
- Civil Engineering students: 2/3

During semester:

- Architecture students: 1/2, multiple assignments
- Civil Engineering students: 1/3 (graded report)
- If a score of less than 10/20 is obtained for the work during semester, the student cannot pass the course at the first examination round. The final score is then the minimum of 9/20 and the weighted result mentioned above.

NB: in case of second chance exam (August-September), grades of semester work are directly transferred (and cannot be retaken)