Course Specifications

Valid as from the academic year 2020-2021

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

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 2020-2021

A (semester 1)  Dutch  Gent  seminar  15.0 h

lecture  30.0 h

practicum  15.0 h

Lecturers in academic year 2020-2021

Steeman, Marijke  TW01  staff member

Janssens, Arnold  TW01  lecturer-in-charge

Offered in the following programmes in  2020-2021

<table>
<thead>
<tr>
<th>Programme</th>
<th>Credits</th>
<th>Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Science in Engineering (main subject Civil Engineering)</td>
<td>6</td>
<td>A</td>
</tr>
<tr>
<td>Bachelor of Science in Engineering: Architecture</td>
<td>6</td>
<td>A</td>
</tr>
<tr>
<td>Bachelor of Science in Civil Engineering</td>
<td>6</td>
<td>A</td>
</tr>
<tr>
<td>Preparatory Course Master of Science in Engineering: Architecture</td>
<td>6</td>
<td>A</td>
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<tr>
<td>(main subject Architectural Design and Construction Techniques)</td>
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</tr>
<tr>
<td>Preparatory Course Master of Science in Engineering: Architecture</td>
<td>6</td>
<td>A</td>
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<tr>
<td>(main subject Urban Design and Architecture)</td>
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Teaching languages

Dutch

Keywords

heat and moisture transfer in building envelope parts, energy performance of buildings

Position of the course

To create an understanding in the issues of energy performance and moisture control in buildings. To teach calculation methods and performance criteria to evaluate the thermal and moisture performance of buildings and building components. To give a critical analysis of heat and moisture control measures in building envelope parts.

Contents

- Heat transfer in buildings: Heat conduction in buildings, Heat transfer at surfaces (convection and radiation), Heat transfer in cavity wall (conduction, convection and radiation)
- Moisture transfer in buildings: Water vapour transport in materials and structures, Moisture control in buildings, Moisture transport in porous materials
- Thermal and hygric behaviour of buildings: Principles, Materials for thermal isolation, Roofs, External walls, Floors, Windows
- Energy balance of buildings: Terms of the energy balance (transmission and ventilation heat loss, solar gains), Thermal mass, Semi-steady state calculation of heating energy use
- Practical exercises: Guided exercises, Project exercise

Initial competences

construction of buildings

Final competences

1 Define typical variables in building physics and relate them to hygrothermal material - and construction characteristics
2 Be able to derive and build calculation methods and models in building physics, and be able to use these methods when evaluating building physics performances.

(Approved)
3 Apply and integrate heat and moisture insulation in the construction and building design in a physically correct way.

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, practicum, seminar, online lecture, online seminar

Learning materials and price
Dutch lecture notes, 15 eur

References
• H. Hens: Bouwfysica 1, Acco Leuven 1997
• A.C. van der Linden: Bouwfysica, SMD Leiden 1996

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

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 not possible

Extra information on the examination methods
During examination period: written closed-book exam. During semester: graded project reports.

Calculation of the examination mark
Calculation of the score: 25% exercises project, 75% exam.
Submitting the assignment is a prerequisite for successful completion of the course.
If the student does not submit the assignment, the final score will be calculated as the minimum of the final score at 20, and 9 at 20.