GHENT UNIVERSITY

# Course Specifications

Valid as from the academic year 2018-2019

## Materials (E701029)

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

| Credits | Study time | Contact hrs |
|---|---|---|
| 3.0 | 90 h | 24.0 h |

Course offerings and teaching methods in academic year 2018-2019

| | | | |
|---|---|---|---|
| A (semester 1) | Dutch | lecture | 24.0 h |

Lecturers in academic year 2018-2019

| | | |
|---|---|---|
| Ragaert, Kim | TW11 | lecturer-in-charge |

| Offered in the following programmes in 2018-2019 | crdts | offering |
|---|---|---|
| Bachelor of Science in Engineering Technology (main subject Chemical Engineering Technology) | 3 | A |
| Bachelor of Science in Engineering Technology (main subject Civil Engineering Technology) | 3 | A |
| Bachelor of Science in Engineering Technology (main subject Electromechanical Engineering Technology) | 3 | A |
| Bachelor of Science in Engineering Technology (main subject Electronics and ICT Engineering Technology) | 3 | A |
| Bachelor of Science in Engineering Technology (main subject Information Engineering Technology) | 3 | A |
| Joint Section Bachelor of Science in Engineering Technology | 3 | A |

### Teaching languages

Dutch

### Keywords

Materials Science, structure of materials, material properties, materials technology, material selection

### Position of the course

The properties of materials are largely dependent on their structure. Within this course, not only the different (mostly mechanical) properties of materials are discussed, but also the different material structures. An insight into the relationship between both aspects is given. The student gains a basic insight into the different material classes (metals, polymers, ceramics, composites), the processing of materials and material selection.

### Contents

- Structure of materials
- Material properties and measurement methods for these properties
- Introduction to the different material classes: metals, polymers, ceramics and composites
- Processing of materials and the influence on structure and properties
- Principles of material selection (CES material selector)

### Initial competences

Physics and Chemistry from secondary school.

### Final competences

1 To understand the structure of materials, the characteristic properties and behaviour of materials and the structure-property relations
2 To understand the basic principles of materials technology, applications and processing methods as well as the influence of processing on structure
3 To be able to perform or analyse a simple material selection

### 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

Extra information on the teaching methods

lectures

Learning materials and price

- textbook: 'Materiaalkunde voor Ontwerpers en Constructeurs', 4de editie, Van Mourik & van Dam, ISBN 978-90-6562-305-8(30 euro)
- CES database (via Athena)
- slides from the lectures
- additional course material for specific topics (via learning platform)

References

- Materiaalkunde voor Ontwerpers en Constructeurs. P. Van Mourik, J. van Dam. ISBN 978-90-6562-305-8.
- Fundamentals of materials science and engineering: an integrated approach, W.D. Callister, D.G. Rethwisch, John Wiley & Sons, 2012.
- "Essentials of modern Materials Science and engineering", James Newell, Wiley & sons, ISBN 978-0-471-75365-0

Course content-related study coaching

consultation with lecturer possible during and after classes

Evaluation methods

end-of-term evaluation

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

Possibilities of retake in case of permanent evaluation

not applicable

Extra information on the examination methods

the exam is composed of a partim multiple choice (minimum 12 - maximum 15 questions) and a partim open questions.

Calculation of the examination mark

standard setting applies to partim multiple choice questions