

Applied Materials Science (E741031)

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

Credits	3.0	Study time	90 h	Contact hrs	24.0 h
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Course offerings and teaching methods in academic year 2018-2019

A (semester 2)	Dutch	lecture: plenary	4.0 h
		exercises	
		lecture	20.0 h

Lecturers in academic year 2018-2019

Ragaert, Kim	TW11	lecturer-in-charge
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Offered in the following programmes in 2018-2019

	crdts	offering
Bachelor of Science in Engineering Technology (main subject Electromechanical Engineering Technology)	3	A
Bachelor of Science in Electromechanical Engineering Technology	3	A
Linking Course Master of Science in Electromechanical Engineering Technology	3	A

Teaching languages

Dutch

Keywords

materials science, metals, steel, polymers, (micro-)structure, materials selection

Position of the course

starting from the basic concepts and introduction to material classes, which was taught in 1Ba (Materials), here the structure, properties and applications of the material classes metals and polymers are further elaborated. This course forms the bridge to the material-related specialization courses in the master year.

Contents

- Metals
 - Binary phase diagrams
 - Ferrous alloys (structures, heat treatments, alloying)
 - Non-ferrous alloys (Al and Cu)
- Polymers (thermoplastics)
 - Chain structure and crystallinity
 - Mechanical properties
- Material selection
 - Principles of material selection
 - Ashby methods
 - Case studies

Initial competences

advisory starting competence:
Materials (1Ba)

Final competences

- 1 In-depth understanding of the structure of materials and the relation between this structure and the material properties. This includes the understanding of how a (post) treatment will affect the structure.
- 2 Make an adequate material selection for a given application

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, lecture: plenary exercises

Learning materials and price

Textbook: 'Materiaalkunde voor Ontwerpers en Constructeurs', 4th edition, Van Mourik & van Dam, ISBN 978-90-6562-305-8

Slides from classroom.

Additional course material for certain topics.

estimated cost: book 27 euro , course material 3 euro

References

Course content-related study coaching

consultation with lecturer possible during and after colleges

Evaluation methods

end-of-term evaluation

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

Written examination with open questions

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

Written examination with open questions

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

examination during the second examination period is not possible

Calculation of the examination mark

exam 100%