

Philosophy and Science (E075060)

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 3.0 Study time 90 h Contact hrs 15.0 h

Course offerings and teaching methods in academic year 2020-2021

A (semester 1) Dutch Gent lecture 15.0 h

Lecturers in academic year 2020-2021

Van Dyck, Maarten LW01 lecturer-in-charge

Offered in the following programmes in 2020-2021

	crdts	offering
Bachelor of Science in Engineering (main subject Biomedical Engineering)	3	A
Bachelor of Science in Engineering Technology (main subject Chemical Engineering Technology)	3	A
Bachelor of Science in Engineering (main subject Chemical Engineering and Materials Science)	3	A
Bachelor of Science in Engineering (main subject Civil Engineering)	3	A
Bachelor of Science in Engineering (main subject Computer Science Engineering)	3	A
Bachelor of Science in Engineering (main subject Electrical Engineering)	3	A
Bachelor of Science in Engineering (main subject Electromechanical Engineering)	3	A
Bachelor of Science in Engineering (main subject Engineering Physics)	3	A
Bachelor of Science in Civil Engineering	3	A
Bachelor of Science in Computer Science Engineering	3	A
Bachelor of Science in Chemical Engineering and Materials Science	3	A
Bachelor of Science in Electrical Engineering	3	A
Bachelor of Science in Engineering Physics	3	A
Bachelor of Science in Electromechanical Engineering	3	A
Master of Science in Electrical Engineering (main subject Communication and Information Technology)	3	A
Master of Science in Electromechanical Engineering (main subject Control Engineering and Automation)	3	A
Master of Science in Electromechanical Engineering (main subject Electrical Power Engineering)	3	A
Master of Science in Electrical Engineering (main subject Electronic Circuits and Systems)	3	A
Master of Science in Electromechanical Engineering (main subject Maritime Engineering)	3	A
Master of Science in Electromechanical Engineering (main subject Mechanical Construction)	3	A
Master of Science in Electromechanical Engineering (main subject Mechanical Energy Engineering)	3	A
Master of Science in Civil Engineering	3	A
Master of Science in Chemical Engineering	3	A
Master of Science in Civil Engineering	3	A
Master of Science in Computer Science Engineering	3	A
Master of Science in Computer Science Engineering	3	A
Master of Science in Fire Safety Engineering	3	A
Master of Science in Sustainable Materials Engineering	3	A
Master of Science in Engineering Physics	3	A

Teaching languages

Dutch

Keywords

philosophy of science, history of science, underdetermination, theory-ladenness

Position of the course

This introductory course teaches the students to think about the natural sciences. We investigate two philosophical themes: underdetermination of theories by empirical evidence, and theory-ladenness of observations. The goal is to give the student insight in both the possibilities and the limits of scientific evidential reasoning.

Contents

The central themes (underdetermination and theory-ladenness) are introduced through the work of the scientist, philosopher and historian Pierre Duhem. In agreement with his own work these themes are further elaborated through a philosophical analysis of some episodes from the history of science. Attention is paid to how the introduction of crucial concepts made it possible to formulate and empirically ground laws. The historical cases are: Galileo's law of fall, Newton's law of gravity, and Lavoisier's oxygen hypothesis.

Initial competences

Basic familiarity with some central concepts and theories in the natural sciences.

Final competences

- 1 Being able to correctly assess the philosophical and scientific implications of underdetermination of theories by empirical evidence.
- 2 Being able to correctly assess the philosophical and scientific implications of theory-ladenness.
- 3 Being able to explain the impact of underdetermination in historical case studies.
- 4 Being able to explain the impact of theory-ladenness in historical case studies.
- 5 Develop a reflective attitude that can be incorporated in one's own scientific practice.

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, online lecture

Learning materials and price

A reader of English and Dutch articles, distributed via the electronic learning platform

References

Course content-related study coaching

The teacher and his collaborators provide individual feedback when necessary.

Evaluation methods

end-of-term evaluation

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

Written examination, open book examination

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

Written examination, open book examination

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

not applicable

Extra information on the examination methods

Written open book examination. Both the understanding of the texts in the reader and the problems dealt with therein, and the capacity to develop a reflection on them will be tested.

Calculation of the examination mark

Addendum

Onder voorbehoud van goedkeuring door de Faculteitsraad Faculteit
Ingenieurswetenschappen en Architectuur