

Teaching Methodology: Sciences (H002175)

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

Credits 6.0 Study time 180 h Contact hrs 45.0 h

Course offerings in academic year 2018-2019

A (year) Dutch

Lecturers in academic year 2018-2019

Strubbe, Katrien WE06 lecturer-in-charge

Offered in the following programmes in 2018-2019

	crdts	offering
Bachelor of Science in Biochemistry and Biotechnology	6	A
Bachelor of Science in Biology	6	A
Bachelor of Science in Chemistry	6	A
Bachelor of Science in Physics and Astronomy	6	A
Bachelor of Science in Geography and Geomatics	6	A
Bachelor of Science in Geology	6	A
Bachelor of Science in Computer Science	6	A
Bachelor of Science in Mathematics	6	A

Teaching languages

Dutch

Keywords

acquisition of knowledge, assimilation of knowledge, research competencies, beliefs concerning education in mathematics, science and technology

Position of the course

This course contributes to the realisation of the basis professional teacher competencies as stated in the course description and in the matrix of competencies that can be consulted on www.lerarenopleiding.ugent.be. The objectives of this course contribute to the development of supporting knowledge and the skills in relation to the functional wholes of the basic competences of teachers, as determined by decree. The student should be able to reflect in general on the contents of and social relevance of science teaching. We will take the content-related education of the student, with regard to the content of the subject, as a base and link it to the specific didactics.

Contents

- Science education in a modern society (principles of learning, scientific literacy).
- Science education as part of the interdisciplinary final attainment levels of secondary education.
- The history of science and technology.
- Values, attitudes and skills in the context of science education.
- Scientific communication.
- The elaboration of interdisciplinary facets in relation to science education
- Research based education
- Big ideas
- STEM

Initial competences

The general academic competences expected from a bachelor and a master in beta or gamma sciences.

Final competences

- 1 being able to situate the construction and internal coherence of the subfields of

- science education
- 2 Describing the evolution of science and technology at the level of secondary education
- 3 Determining the appropriate didactical strategies according to the learning content
- 4 to broaden, deepen acquired domain specific knowledge and skills in mathematics and sciences and apply in an interdisciplinary setting
- 5 to know and apply on a basic level new elements in science education
- 6 be able to discuss and work as a team
- 7 together with colleagues, contact, discuss and work together with external organisations
- 8 take part in the societal debat on educational topics and discuss the teaching profession and it's position in society
- 9 identify and handle in a critical way the position of sciences in society

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

Guided self-study, lecture, microteaching, project, seminar, self-reliant study activities

Extra information on the teaching methods

For the theoretical part: interactive lectures and seminars are provided. For the practical part: integrationseminars, project

The student-teachers - teachers in training - in a LIO-trajectory have to realize the above-mentioned goals and competences through an alternative portfolio-trajectory. The assignments are elaborated in a manual. There are a number of contact-moments, intervision and coaching. A full LIO-trajectory includes a teaching assignment of minimal 500 hours (this corresponds with teaching assignment of 12 hours a week). Students with an assignment between 200 and 500 hours participate in the LIO-trajectory on a part-time basis. A candidate with a LIO-trajectory of less than 200 hours (this corresponds to a teaching assignment of less than 5h per week) is not admitted to the portfolio-trajectory. The student then has to follow the normal learning-trajectory.

Learning materials and price

Book: kleine geschiedenis van de wetenschap (available in the library of the faculty of sciences)
all other material on Minerva (Dutch and English)

References

- K. Strubbe, B. D'hase, J. De Poorter, H. Vanhoe: onderzoekscompetent in de klas, Gent, 2012
- Rienk Vermij: kleine geschiedenis van de wetenschap, ISBN 9789057122248
- E. Fischbein, Intuition in Science and Mathematics. An Educational Approach. D. Reidel Publishing Company, Dordrecht, 1987.
- R. Stavy, D. Tirosh, How Students (Mis-)Understand Science and Mathematics. Intuitive Rules. Teachers College Press, New York, 2000.

Course content-related study coaching

Interactive support using Minerva
By appointment with lecturer or practical assistants

Evaluation methods

continuous assessment

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

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

Examination methods in case of permanent evaluation

Participation, assignment, skills test, peer assessment

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

Extra information on the examination methods

Details on permanent evaluation:

- Method: For the exercises part there is permanent evaluation on the basis of assignments, cooperation and attitudes.

- Frequence: presence during the exercises is mandatory. Only two absences that are justified, are accepted.
- Description of second exam opportunity: in general a retake of the exams is possible, but some of the exercises and practical sessions cannot be retaken.
- Feedback: by appointment

The student-teachers (teachers in training) in a LIO-trajectory are evaluated on a permanent basis based their assignments in their portfolio.

Calculation of the examination mark

Ramifications of the unfounded absence or non-participation in (part of) the permanent evaluation: students who eschew periodic and/or permanent evaluations for the course unit concerned are given a non-deliberative final quotation (7/20 at the most).