GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2015-2016

Calculus (E000112)

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

Credits	5.0	Study time	150 h
Contact hrs	60.0 h		

Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	Dutch	lecture	25.0 h
		seminar: coached exercises	25.0 h
		seminar: practical PC room classes	10.0 h

Lecturers in academic year 2018-2019

De Schepper, Hennie	TW16	lecturer-in-charge

Offered in the following programmes in 2018-2019	crdts	offering
Bachelor of Science in Engineering: Architecture	5	A

Teaching languages

Dutch

Keywords

Vectors, functions of one and more real variables.

Position of the course

The student is guided through the essential concepts, methods and techniques, needed for handling basis mathematics problems by hand or by means of a computer package. The main aim is to teach the student how to reason in a critical, logical and structured way, while paying attention also to completeness, precision and abstraction.

Contents

- Vectors
  - The linear space of free vectors
  - Dot product, cross product and mixed product of vectors
- Functions of one real variable
  - Limits, continuity, derivation, properties of elementary functions
  - Taylor's formula and extrema
  - Integration techniques: integration by parts, substitution, partial fractions
  - Improper integrals: the Gamma and the Beta function
  - Power series
- Functions of more real variables
  - Limits, continuity and differentiation, differential
  - Taylor's formule, extrema and bounded extrema
  - Multiple integration

Initial competences

Final competences

1 Being able to compute with vectors.
2 Knowing the basic methods for the mathematical analysis of functions and being able to apply the corrsponding techniques.
3 Being able to perform computations by hand or with the computer package Maple efficiently and quickly.
4 Being able to reason in a logical and correct way at the appropriate level of abstraction.

5 Being able to formulate in a structure and precise way.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

Access to this course unit via an exam contract is unrestricted

Teaching methods

Lecture, seminar: coached exercises, seminar: practical PC room classes

Extra information on the teaching methods

During classroom lectures important concepts and properties are introduced and further trained during classroom problem solving sessions, where basic methods are taught for standard applications. Computer-assisted problem solving in small groups aims at the application of the learned methods to new problems.

Learning materials and price

Course notes in dutch (10 Euros). Additional material available electronically (Minerva).

References

Course content-related study coaching

Intensive study coaching during the classroom problem solving sessions. Additionally, students will be encouraged to make use of the available tutoring services for extra help. Interactive support (Minerva forum) is available.

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

Written examination

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 examination in the PC-room (Maple available); only exercises.
- Continuous assessment: tests during the class room problem solving sessions.

Calculation of the examination mark

Continuous assessment: tests will be taken into account for 4 points out of 20. During the second examination period this mark is maintained but counts only for 2 points out of 20.