GHENT UNIVERSITY

Course Specifications

Valid in the academic year 2023-2024

Mathematics II (E610005)

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

Credits 6.0 **Study time 180 h**

Course offerings and teaching methods in academic year 2023-2024

A (semester 2)	Dutch	Kortrijk	lecture
			seminar

Lecturers in academic year 2023-2024

De Vos, Oriana	TWO5	staff member
Audenaert, Pieter	TWO5	lecturer-in-charge

Offered in the following programmes in 2023-2024	crdts	offering
Bachelor of Science in Engineering Technology(main subject Machine and Production Automation)	6	A
Bachelor of Science in Industrial Design Engineering Technology	6	A
Bachelor of Science in Engineering Technology (Joint Section)	6	A
Linking Course Master of Science in Industrial Design Engineering Technology	6	A
Linking Course Master of Science in Machine and Production Automation Engineering Technology	6	A

Teaching languages

Dutch

Keywords

Solid geometry, functions of multiple variables, double integrals, differential equations, linear algebra

Position of the course

This course aims to provide the student with some fundamental concepts, techniques, deductions and solution methods to solve a variety of engineering problems.

Contents

Solid geometry:
- Lines and planes
- Angles and distances
- Quadric surfaces
- Coordinate systems

Calculus:
- Functions of multiple variables: partial derivatives, total derivative, gradient, extrema
- Double integrals: calculation, coordinate transformations
- Differential equations: structure of the solution space, first order equations, higher order equations

Linear algebra:
- Matrices and determinants
- Linear systems
- Linear transformations
- Eigenvalues and eigenvectors

Initial competences

Mathematics II relies on some final competences of Mathematics I

Final competences

1 Being able to work with and have insight in lines and planes in space

2 Being able to work with and have insight in angles and distances in space
3 Being able to work with and have insight in quadric surfaces in space
4 Being able to work with and have insight in coordinate systems in space
5 Being able to work with and have insight in functions of multiple variables (partial derivatives, total derivative, gradient, extrema)
6 Being able to work with and have insight in double integrals (calculation, coordinate transformations)
7 Being able to work with and have insight in differential equations (structure of the solution space, first order equations, higher order equations)
8 Being able to work with and have insight in matrices and determinants
9 Being able to work with and have insight in linear systems
10 Being able to work with and have insight in linear transformations
11 Being able to work with and have insight in eigenvalues and eigenvectors
12 Communicating a reasoning or computation in a correct and structured manner using correct language and mathematical notations
13 Computational competence without calculator

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

Seminar, Lecture

Learning materials and price

- Course notes in Dutch are available

References

- Elements of Differential Geometry, Millman & Parker, Prentice-Hall
- Differentiaalvergelijkingen, van Horssen, Epsilon Uitgaven
- Vectoren en Matrices, van de Craats, Epsilon Uitgaven

Course content-related study coaching

- The lecturer can be asked questions immediately after the lecture
- Tutor service

Assessment moments

end-of-term and continuous assessment

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

Written assessment

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

Written assessment

Examination methods in case of permanent assessment

Written assessment

Possibilities of retake in case of permanent assessment

examination during the second examination period is not possible

Calculation of the examination mark

Calculation:
- Unlawful absence on an evaluation results in a mark zero for that evaluation
- 1st period: total = (1/4)*NPE + (3/4)*PE1
- 2nd period: total = max(PE2, (1/4)*NPE + (3/4)*PE2)

Abbreviations:
- NPE = mark Non-Periodic Evaluation
- PE1 = mark Periodic Evaluation 1
- PE2 = mark Periodic Evaluation 2