

Course Specifications

Valid as from the academic year 2020-2021

Mathematics II (E610005)

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 6.0 Study time 180 h Contact hrs 60.0 h

Course offerings and teaching methods in academic year 2020-2021

A (semester 2)	Dutch	Kortrijk	seminar: coached exercises	24.0 h
			lecture	36.0 h

Lecturers in academic year 2020-2021

De Vos, Oriana	TW05	staff member
Audenaert, Pieter	TW05	lecturer-in-charge

Offered in the following programmes in 2020-2021

	crdts	offering
Bachelor of Science in Engineering Technology (main subject Electromechanical Engineering Technology)	6	A
Bachelor of Science in Engineering Technology (main subject Electronics and ICT Engineering Technology)	6	A
Bachelor of Science in Engineering Technology (main subject Machine and Production Automation)	6	A
Joint Section Bachelor of Science in Engineering Technology	6	A
Bachelor of Science in Industrial Design Engineering Technology	6	A
Bachelor of Science in Bioindustrial Sciences	6	A
Linking Course Master of Science in Electrical Engineering Technology (main subject Automation)	6	A
Linking Course Master of Science in Electromechanical Engineering Technology	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
Linking Course Master of Science in Biochemical Engineering Technology	6	A
Linking Course Master of Science in Bioindustrial Sciences: Circular Bioprocesses technology	6	A
Linking Course Master of Science in Environmental 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 lines and planes in space
- 2 Being able to work with angles and distances in space
- 3 Being able to work with quadric surfaces in space
- 4 Being able to work with coordinate systems in space
- 5 Being able to work with functions of multiple variables (partial derivatives, total derivative, gradient, extrema)
- 6 Being able to work with double integrals (calculation, coordinate transformations)
- 7 Being able to work with differential equations (structure of the solution space, first order equations, higher order equations)
- 8 Being able to work with matrices and determinants
- 9 Being able to work with linear systems
- 10 Being able to work with linear transformations
- 11 Being able to work with eigenvalues and eigenvectors

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, seminar: coached exercises, online lecture, online seminar: coached exercises

Learning materials and price

- Course notes in Dutch are available

References

- Elements of Differential Geometry, Millman & Parker, Prentice-Hall
- Differential Equations and Linear Algebra, Strang, Wellesley-Cambridge Press
- Advanced Calculus, Wrede & Spiegel, McGraw-Hill

Course content-related study coaching

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

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

Calculation of the examination mark

Calculation:

- 1st period: total = $(1/4)*NPE + (3/4)*PE1$
- 2nd period: total = $\max(PE2, (1/4)*NPE + (3/4)*PE2)$
- In case the mark for the PE is 7/20 or less, there is a deviation from the calculated mark if that is 10/20 or more and the final mark will be 9/20.

Abbreviations:

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