

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

Credits	3.0	Study time	90 h	Contact hrs	22.5 h
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Course offerings and teaching methods in academic year 2018-2019

A (semester 2)	Dutch	seminar: coached	3.75 h
		exercises	
		guided self-study	7.5 h
		lecture	7.5 h
		seminar: practical PC	3.75 h
		room classes	

Lecturers in academic year 2018-2019

De Schepper, Hennie	TW16	lecturer-in-charge
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Offered in the following programmes in 2018-2019

Switching Track to Engineering	crdts	offering
	3	A

Teaching languages

Dutch

Keywords

vectorruimte, lineaire en affiene transformaties, matrices, eigenwaarden, eigenvectoren, diagonaliseren, inproductruimten, orthogonale projectie, vectorrekening, krommen en oppervlakken

Position of the course

Deze cursus beoogt de student inzicht te verstrekken in de basisconcepten van de lineaire algebra alsook in meetkundige structuren. Tevens leert de student algebraïsche technieken aanwenden voor de beschrijving en manipulatie van meetkundige objecten.

Contents

- lineaire ruimten
- matrices en lineaire en affiene transformaties
- eigenwaarden en eigenvectoren
- diagonaliseerbaarheid
- inproductruimten
- bilineaire en kwadratische vormen
- parametrische voorstelling van krommen en oppervlakken

Initial competences

Wiskundige basisvaardigheden, zoals verworven in het vak "Wiskunde 1".

Final competences

- 1 Being able to compute with vectors.
- 2 Having acquired insights in the concepts vector space, linear combination, linear (in) dependence, basis and dimension.
- 3 Being able to write down the matrix representation of a linear or coordinate transform in an abstract vector space.
- 4 Having acquired insight in the geometrical and algebraic properties of specific transforms.
- 5 Having acquired insight in the concepts kernel, image, determinant and rank.
- 6 Having acquired insight in the structure of the solutions of a system of linear equations and being able to solve such a system.
- 7 Having acquired insight in the mathematical, geometrical and physical meaning of eigenvalues and eigenvectors.
- 8 Being able to construct orthogonal bases and to project a vector onto a subspace.

9 Having acquired insight in the properties of bilinear and quadratic forms.

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

Guided self-study, lecture, seminar: coached exercises, seminar: practical PC room classes

Extra information on the teaching methods

During classes and individual guidance the most important concepts are introduced and trained, also by means of a computer package.

Learning materials and price

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

References

- J H Kindle, Theory and problems of plane and solid analytic geometry, Schaum's Outline series, Mac Graw-Hill, New York
- J Golan, Foundations of Linear Algebra, Kluwer

Course content-related study coaching

Additional guidance by the docent as well as by the tutoring services of the faculty.

Evaluation methods

end-of-term evaluation

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

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). The examination consists of exercises and applied theory.

Calculation of the examination mark

The marks are completely determined by the examination.