



# Exchange programme Vrije Universiteit

Vrije Universiteit Amsterdam - Exchange programme Vrije Universiteit - 2022-2023

## Exchange

Vrije Universiteit Amsterdam offers many English-taught courses in a variety of subjects, ranging from arts & culture and social sciences, neurosciences and computer science, to economics and business administration.

The International Office is responsible for course approval and course registration for exchange students. For details about course registration, requirements, credits, semesters and so on, please [visit the exchange programmes webpages](#).

# Linear Algebra

Course Code	X_400042
Credits	6.00
Period	P4+5
Course Level	100
Language Of Tuition	English
Faculty	Faculty of Science
Course Coordinator	dr. I. Canakci
Examiner	dr. I. Canakci
Teaching Staff	dr. I. Canakci
Teaching method(s)	Partial Exam, Lecture, Seminar

## Course Objective

After successfully completing this course, the student

- has a working knowledge of the concepts of matrix algebra and finite-dimensional linear algebra, such as echelon form, LU-decomposition, linear independence and determinants;
- is familiar with the general theory of finite-dimensional vector spaces, in particular with the concepts of basis and dimension;
- is familiar with the concepts of eigenvalues and eigenvectors, diagonalization and singular value decomposition and can apply these concepts in basic applications in discrete time dynamical systems;
- has working knowledge of the concepts of inner product spaces and matrices acting in inner product spaces, including orthogonal projections and diagonalization of symmetric matrices.

## Course Content

- systems of linear equations
- linear (in)dependence
- linear transformations and matrices
- matrix operations
- determinants
- vector spaces and subspaces
- basis and dimension
- rank of a matrix, dimension theorem
- coordinate systems and change of basis
- eigenvalues and eigenvectors
- diagonalization of matrices
- inner product, length and orthogonality
- orthogonal bases and least-squares problems
- diagonalization of symmetric matrices
- singular value decomposition

## Additional Information Teaching Methods

2 lectures and 1 exercise class per week

## Method of Assessment

Four small tests (20 percent, only the best three are taken into account), a midterm exam (40 percent) and a final exam (40 percent). There is a resit. For students taking the resit the final grade is determined by the maximum of 0.2 times the average of the best three tests plus 0.8 times the result of the resit, and just the resit.

## Literature

David C. Lay, Stephen R. Lay and Judi J. McDonald, Linear Algebra and its Applications, 5th edition, Pearson Global Edition, ISBN-13 9781292092232

## Additional Information Target Audience

1BA