Course Manual for Linear Algebra, Spring 2026

Course Name	**Linear Algebra**
Semester	Fall 2025
Course code	900127ACCY
Credits	6 ecp
Timeslots and locations	*Group 1*: Tue 15:45 – 17:30 and Fri 11:00 – 12:45 *Group 3*: Tue 13:45 – 15:30 and Fri 09:00 – 10:45 All classes are in Room **3.01**
Prerequisite(s)	'Calculus', 'Calculus for Economics' or 'Mathematical Methods for Economics' or 'Methods in Life and Earth Sciences'
Teacher	Group 1: Jan-Willem van Ittersum (j.w.m.vanittersum@uva.nl) Group 3: Senja Barthel (s.barthel@vu.nl) and Guy Boyde (g.boyde@vu.nl)
Coordinator	Dr. Yurii Khomskii: y.d.khomskii@uva.nl
Course Content	**Linear algebra** is one of the foundational fields of classical mathematics, dealing with linear equations and their solutions, linear transformations and geometric representations using vectors and matrices. Linear Algebra has numerous applications and appears in a great variety of contexts. Many natural processes can be described with reasonable accuracy by a linear approximation (in which non-linear interactions are neglected). In this course, the students will learn about: 1. Linear equations, matrices and vectors 2. Linear transformations and determinants 3. Abstract vector spaces 4. Subspaces, dimension and rank 5. Eigenvalues, eigenvectors, diagonalisation 6. Inner products and orthogonality 7. Least squares method 8. Applications to other fields
Learning Outcomes	1. The student is able to *solve* problems involving linear systems of equations, matrix-vector computations, computing inverse matrices, determinants, diagonliazations, projections and perform other basic algorithms of linear algebra. 2. The student *understands* linear algebra on an abstract level, and can *analyse* abstract problems and understands which method or theory needs to be *applied* in a variety of contexts. 3. The student *understands* more advanced topics of linear algebra, such as determinants, Eigenvalues and Eigenvectors, inner products, orthogonality and least squares solutions, and is able to *apply* them in various contexts. 4. The student *understands* and is familiar with the style of abstract mathematics, including definitions, theorem and proofs, and has *developed* some sense of mathematical maturity.

Contribution to the general learning outcomes	2.3.1 (a), 2.3.1(b), 2.3.2(a), 2.3.2(d), 2.3.2(f)
Form(s) of Instruction	Lectures with incorporated exercises
Assessments	Exam 1: 30% (LO 1, 2) Exam 2: 30% (LO 1, 3, 4) Exam 3: 30% (LO 1, 2, 3, 4) Assignment 1: 1.5% (LO 1, 2) Assignment 2: 1.5% (LO 1, 2) Assignment 3: 1.5% (LO 1, 3) Assignment 4: 1.5% (LO 1, 3, 4) Assignment 5: 2% (LO 1, 3, 4) Assignment 6: 2% (LO 1, 3, 4)
Attendance	Attendance is mandatory; there are 23 lectures in which attendance is taken. You may miss at most 25%, which amounts to 6 out of 23 lectures (7th absence is an automatic fail).
Use of Generative AI	Using GenAI tools (such as GPT) for *learning* Linear Algebra is allowed, but students need to be aware that such tools often make mistakes, and make claims that sound convincing but are incorrect, leading to unnecessary confusion. GenAI may be used to help with writing (structure, wording etc.) as well as to direct students to the right resources. Submitted homework exercises *must* be authored solely by the student, and unauthorised use of GenAI is considered fraud and will be reported to the BoE (see AS&P, appendix 2).
Main Course Source	David C. Lay, Stephen R. Lay, Judi J. McDonald, "Linear Algebra and its Applications", 5th Edition, New International Edition, Pearson 2013. ISBN 978-1-292-09223-2. (Alternative editions should also be possible).
Visits and Excursions	–
Course Adjustments	A minor adjustment is that homework assignments will be out of 20 points each rather than 100 points. This makes grading more straightforward and fair.