COURSE DETAIL

LINEAR ALGEBRA
Country Netherlands
Host Institution Maastricht University – University College Maastricht
Program(s) University College Maastricht
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Mathematics
UCEAP Course Number 106
UCEAP Course Suffix
UCEAP Official Title LINEAR ALGEBRA
UCEAP Transcript Title LINEAR ALGEBRA
UCEAP Quarter Units 6.00
UCEAP Semester Units 4.00

Course Description

Linear algebra is the branch of mathematics that is primarily concerned with problems involving linearity of one kind or another. This is reflected by the three main themes around which this introductory course is centered. The first theme concerns how to solve a system of linear equations. For this problem, a complete solution procedure is developed which provides a way to deal with such problems systematically, regardless of the number of equations or the number of unknowns. The second theme addresses linear functions and mappings, which can be studied naturally from a geometric point of view. This involves geometric ‘primitives’ such as points, lines, and planes, and geometric ‘actions’ such as rotation, reflection, projection, and translation. One of the main tools of linear algebra is offered by matrices and vectors, for which a basic theory of matrix-vector computation is developed. This allows one to bring these two themes together in a common, exceptionally fruitful, framework. By introducing the notions of vector spaces, inner products, and orthogonality, a deeper understanding of the scope of these techniques is developed, opening up a large array of rather diverse application areas. The third theme shifts from the geometric point of view to the dynamic perspective, where the focus is on the effects of iteration (i.e., the repeated application of a linear mapping). This involves a basic theory of eigenvalues and eigenvectors. Examples and exercises are provided to clarify the issues and to develop practical computational skills. They also serve to demonstrate practical applications where the results of this course can be successfully employed. Prerequisites include Basic Mathematical Tools or substantial high school experience in Mathematics.

Language(s) of Instruction
English

Host Institution Course Number
SCI2019

Host Institution Course Title
LINEAR ALGEBRA

Host Institution Course Details

https://www.maastrichtuniversity.nl/file/ucm-course-catalogue-2023-2024pdf

Host Institution Campus
Maastricht University

Host Institution Faculty
University College Maastricht

Host Institution Degree

Host Institution Department
Science

Course Last Reviewed
2023-2024

Print