

## The Department of Mathematics

2025–26–B term

**Course Name** Linear algebra 2

**Course Number** 201.1.1221

**Course web page**

<https://math.bgu.ac.il/en/teaching/spring2026/courses/linear-algebra-2>

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**Office Hours** <https://math.bgu.ac.il/en/teaching/hours>

### Abstract

### Requirements and grading<sup>1</sup>

### Course topics

- Rings. Ring of polynomials and its ideal structure. The prime factorization of a polynomial. Lagrange interpolation.
- Eigenvalues and eigenvectors of linear operators.
- Characteristic polynomial and Cayley-Hamilton theorem. The primary decomposition theorem. Diagonalization. Nilpotent operators. Jordan decomposition in small dimension Jordan decomposition in general dimension-time permitted
- Linear forms. Dual basis. Bilinear forms.
- Inner product spaces. Orthogonal bases. Projections. Adjoint linear transformation. Unitary and Hermitian operators.
- Normal operators and the spectral decomposition theorem. Singular value decomposition theorem and applications.

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<sup>1</sup>Information may change during the first two weeks of the term. Please consult the webpage for updates