

The Department of Mathematics

2024–25–B term

Course Name Linear algebra 2

Course Number 201.1.1221

Course web page

<https://math.bgu.ac.il/en/teaching/spring2025/courses/linear-algebra-2>

Lecturer Prof. Ilya Tyomkin, <tyomkin@bgu.ac.il>, Office 213

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

Abstract

Requirements and grading¹

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.

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