

The Department of Mathematics

2017–18–A term

Course Name Linear Algebra for physics students

Course Number 201.1.9641

Course web page

<https://math.bgu.ac.il/en/teaching/fall2017/courses/linear-algebra-for-physics->

Lecturer Prof. Yair Glasner, <yairgl@bgu.ac.il>, Office 205

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

Abstract

Requirements and grading¹

- Fields: definitions, the field of complex numbers.
- Linear equations: elementary operations, row reduction, homogeneous and inhomogeneous systems, representations of the solutions.
- Vector spaces: examples, subspaces, linear dependence, bases, dimension.
- Matrix algebra: matrix addition and multiplication, elementary operations, the inverse of a matrix, the determinant, Cramer's rule.
- Linear transformations: examples, kernel and image, matrix representation.
- Diagonalization: eigenvectors and eigenvalues, the characteristic polynomial, applications.
- Bilinear forms.
- Finite dimensional inner product spaces.
- Operators on finite dimensional inner product spaces: the adjoint, self adjoint operators, normal operators, diagonalization of normal operators.

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



Course topics

- Fields: definitions, the field of complex numbers.
- Linear equations: elementary operations, row reduction, homogeneous and inhomogeneous systems, representations of the solutions.
- Vector spaces: examples, subspaces, linear dependence, bases, dimension.
- Matrix algebra: matrix addition and multiplication, elementary operations, the inverse of a matrix, the determinant, Cramer's rule.
- Linear transformations: examples, kernel and image, matrix representation.
- Diagonalization: eigenvectors and eigenvalues, the characteristic polynomial, applications.
- Bilinear forms.
- Finite dimensional inner product spaces.
- Operators on finite dimensional inner product spaces: the adjoint, self adjoint operators, normal operators, diagonalization of normal operators.