אוניברסיטת
בן-גוריון בנגב

# The Department of Mathematics

2017–18–B term

**Course Name** Linear Algebra for Engineering

**Course Number** 201.1.9531

**Course web page**
`https://www.math.bgu.ac.il//en/teaching/spring2018/courses/linear-algebra-for-communication-engineering`

**Lecturer** Dr. Noa Eidelstein, <eidelste@post.bgu.ac.il>, Office -111

**Office Hours** `https://www.math.bgu.ac.il/en/teaching/hours`

## Abstract

## Requirements and grading[1]

Fields. Fields of rational, real and complex numbers. Finite fields. Calculations with complex numbers. Systems of linear equations. Gauss elimination method. Matrices. Canonical form of a matrix. Vector spaces . Homogeneous and non homogeneous systems. Vector spaces. Vector spaces. Vector subspace generated by a system of vectors. Vector subspace of solutions of a system of linear homogeneous equations. Linear dependence. Mutual disposition of subspaces. Basis and dimension of a vector space. Rank of a matrix. Intersection and sum of vector subspaces. Matrices and determinants. Operations with matrices. Invertible matrices. Change of a basis. Determinants. Polynomials over fields. Divisibility. Decomposition into prime polynomials over R and over C. Linear transformations and matrices. Linear transformations and matrices. Kernel and image. Linear operators and matrices. Algebra of linear operators. Invertible linear operators. Eigenvectors and eigenvalues of matrices and linear operators. Diagonalization of matrices and linear operators. Scalar multiplication. Orthogonalization process of Gram-Shmidt. Orthogonal diagonalization of symmetric matrices.

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

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## Course topics

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