

# The Department of Mathematics

2021–22–A term

**Course Name** Linear Algebra for Biotechnology

**Course Number** 201.1.9551

**Course web page**

<https://www.math.bgu.ac.il/en/teaching/fall2022/courses/linear-algebra-for-biot>

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

## Abstract

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

## Course topics

Complex numbers. Systems of linear equations. Solving linear systems: row reduction and echelon forms. Homogenous and inhomogenous systems. Rank of matrix. Vector spaces. Linearly independent and linearly dependent sets of vectors. Linear combinations of vectors. Inner (dot) product, length, and orthogonality. The Gram - Schmidt process. Matrices: vector space of matrices, linear matrix operations, matrix multiplication, inverse matrix. An algorithm for finding inverse matrix by means of elementary row operations. Rank of matrix and its invertibility. Solving systems of linear equations by means of inverse matrix. Determinants. Condition  $\det A = 0$  and its meaning. Transposed matrix. Eigenvectors and eigenvalues. The characteristic polynomial and characteristic equation. Finding of eigenvectors and eigenvalues. Diagonalization and diagonalizable matrices. Symmetric matrices.

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