אוניברסיטת
בן-גוריון בנגב

The Department of Mathematics

2022–23–B term

Course Name Algebra 1 for CS

Course Number 212.1.7011

Course web page
`https://www.math.bgu.ac.il//en/teaching/spring2023/courses/algebra-1-cs`

Lecturer Dr. Guy Landsman, <glandsman@post.bgu.ac.il>, Office

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

Abstract

Requirements and grading[1]

Course topics

.1 General background: sets and operations on them, Complex numbers: definition (via ordered pairs), addition and multiplication, inverses, adjoint, absolute value. Real and complex polynomials and their roots.

.2 Fields: Definition, properties, examples: Rationals, reals, complex numbers, integers mod p.

.3 Linear equations over fields, matrices and elementary row operations, rank of a matrix, solutions of homogeneous and non homogeneous systems of linear equations and the connections between them.

.4 Vector spaces over fields, subspaces, bases and dimensions, coordinates change of coordinate matrix, row rank as rank of a subspace, sums, direct sums of subspaces and the dimension theorem.

.5 Matrices multiplication, the algebra of square matrices, inverse determinants: properties, Cramer's rule, adjoint and its use for finding the inverse.

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

אוניברסיטת
בן-גוריון בנגב

.6 Linerar transformationsbasic propertieskernel and image of a linear trasformationrepresentaion of linear transformations by matrices and the effect of change of bases.linear functionals, dual bases