The Department of Mathematics
2017–18–B term

Course Name  Algebra 2
Course Number  201.1.7021

Course web page  

Lecturer  Prof. Yoav Segev, <yoavs@bgu.ac.il>, Office 215
Office Hours  
https://www.math.bgu.ac.il/en/teaching/hours

Requirements and grading

1. Polynomialsalgebras and idealsthe algebra of polynomials and its ideal structure-Lagrange interpolationthe prime factorization of a polynomial.2. Elementary canonical forms characteristic values and vectors of linear transformations and matrices.characteristic polynomials and annihilating polynomialsinvariant subspaces.direct sum decompostions .invariant direct sums. the primary decomposition theorem.diagonalization:necessary and sufficient conditions for diagonalization, computing diagonalizing matrices.3. Inner product spacesinner productsinner product spaces linear functionals and adjointsunitary operatorsHermitian operatorsnormal operators and the spectral decomposition theoremingular value decomposition theorem and applications4. Jordan forms (optional)cyclic subspaces and annihilatorscyclic decompostionsthethe Jordan form and its computation

Course topics

• Rings. Ring of polynomials and its ideal structure. The prime factorization
  of a polynomial. Lagrange interpolation.

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


Optional topics:

• Quadratic forms.

• Sylvester theorem.

• Classification of quadrics in two-dimensional spaces.