• 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, element ary 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.