Linear Algebra for physics students

2018–19–A

- 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, elementary 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.