

## **Math 110, Summer 2012 : Prerequisite knowledge**

The only prerequisite for Math 110 is Math 54, or an equivalent linear algebra course. As such, the following knowledge is presumed known or that you are at least familiar with these concepts. The textbook used for Math 54 is 'Linear Algebra and Its Applications' by D. Lay so the terminology will follow what is used there. If you are unfamiliar with any words/concepts written below please let me know so that we can chat this over.

### **Row-reduction**

*elementary row operations, reduced echelon form, row-equivalence, determining consistency of systems of linear equations, using row-reduction to solve systems of linear equations, pivots, pivot columns, determining explicitly solution sets to systems of linear equations.*

### **Matrix equations, vector equations**

*determining linear independence of sets of column vectors via homogeneous matrix equations, determining if a column vector lies in a spanning set via matrix equations.*

### **Vector spaces, Linear maps**

*basic definitions, examples, subspaces, determining if a subset is a subspace, showing that a function is linear, representing linear maps by matrices, bases, coordinates, change of coordinates, rank, onto and one-to-one linear maps.*

### **Matrices**

*basic definitions and properties, matrix arithmetic, matrix multiplication, null space, column space, rank, nullity, determining rank/nullity of a matrix, Rank Theorem, invertible matrices, criteria for determining when a matrix is invertible, computing inverse matrices, determinants.*

### **Diagonalisation**

*eigenvectors, eigenvalues, eigenspace, characteristic equation, diagonalisable matrices, determining when a matrix is diagonalisable, computing eigenbases.*