

School of Mathematics**Course 111 — Algebra**

2006–07

(JF Mathematics, Theoretical Physics & Two-subject Moderatorship)

Lecturer: Dr. S. Ryan**Requirements/prerequisites:** None**Duration:** 24 weeks**Number of lectures per week:** 4 and 1 tutorial**Assessment:** Two two-hour examinations, one at the end of Michaelmas term and one at the end of Hilary term, count for 20% each**End-of-year Examination:** One 3-hour exam in May/June counts for 60%

Description: The following topics are covered: Elementary set theory; the integers; group theory including the group axioms, examples of groups and applications, permutation groups, cosets, normal subgroups, quotient group, homomorphisms and isomorphisms; rings and fields; linear algebra including linear independence, vector spaces and inner product spaces, basis and dimension, Cauchy-Schwarz, orthogonality, linear transformations, matrices, matrix-vector multiplication, invertibility and singularity, techniques for solving systems of linear equations, canonical forms for matrices including Jordan form, eigenvalues and eigenvectors, orthogonal matrices.

More information can be found at <http://www.maths.tcd.ie/~ryan/111.html>

March 26, 2007