

200-level SUBJECT HANDBOOK ENTRY 2008 – New Generation Subjects

Subject Code	620-2xx
Title of the subject	Group Theory with Linear Algebra
Credit points	12.5
Coordinator	Karen Baker
Semester of offer	2
Prerequisites	610-2xx Real Analysis with Applications and one of [07]620-122, [08]620-142, 620-156, 620-157, [05]620-192, [05]620-194, [07]620-211; or 620-xxx Multivariable and Vector Calculus
Mode of delivery	Lectures and tutorials
Contact hours	36 one-hour lectures (three per week), 11 one-hour tutorials (one per week)
Estimated total time commitment: (including non-contact time)	120 hours
Description	This subject introduces the theory of groups, which is at the core of modern algebra, and which has applications in many parts of mathematics, chemistry, and theoretical physics. It also develops the theory of linear algebra, building on material in earlier subjects and providing both a basis for later mathematics studies and an introduction to topics which have important applications in science and technology. Topics include: abstract groups, homomorphisms, normal subgroups, quotient groups, group actions, symmetry groups, permutation groups and matrix groups; theory of general vector spaces, inner products, linear transformations, spectral theorem for normal matrices, Jordan normal form. An enriched version of this subject for advanced students with extension topics given in supplementary lectures is also proposed.
Assessment	Up to 50 pages of written assignments 20% (due during semester), a 3-hour written examination 80% (in the examination period).
Prescribed texts	Not decided
Notes	
Subject objectives	
Generic skills	In addition to learning specific skills that will assist students in their future careers in science, they will have the opportunity to develop generic skills that will assist them in any future career path. These include <ul style="list-style-type: none"> • problem-solving skills: the ability to engage with unfamiliar problems and identify

	<p>relevant solution strategies;</p> <ul style="list-style-type: none">• analytical skills: the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of analysis;• collaborative skills: the ability to work in a team;• time management skills: the ability to meet regular deadlines while balancing competing commitments.
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