

University of Pretoria Yearbook 2017

Abstract algebra 352 (MAT 352)

Qualification	Undergraduate
Faculty	Faculty of Natural and Agricultural Sciences
Module credits	15.00
Prerequisites	MAT 261
Contact time	3 lectures per week, 1 discussion class per week
Language of tuition	Module is presented in English
Academic organisation	Mathematics and Applied Maths
Period of presentation	Semester 1

Module content

Groups: Definition and examples, permutation group of a set, symmetry of a figure, subgroups, cyclic groups and dihedral groups, homomorphisms and isomorphisms. Quotient groups: Equivalence relations, cosets and Lagrange's theorem, normal subgroups and quotient groups, isomorphism theorems. Rings and fields: Rings, integral domains and fields, subrings and ring homomorphisms, polynomial rings, polynomial and Euclidean rings (division algorithm, Euclidean algorithm, unique factorization, factoring real and complex polynomials, factoring rational and integral polynomials). Geometrical constructions: Constructable numbers, constructability and extensions of \mathbb{Q} , constructability and polynomials, classical problems.

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