

ZMATH 2014d.00683

Broué, Michel

Some topics in algebra. An advanced undergraduate course at PKU.

Mathematical Lectures from Peking University. Berlin: Springer (ISBN 978-3-642-41268-4/hbk; 978-3-642-41269-1/ebook). xii, 199 p. (2014).

This textbook is an introduction and guide to advanced undergraduate algebra (commutative rings, ideals, basic of fields theory, algebraic integers, modules, tensor functors, projective modules, etc.) and is based on two months author's course at the Beijing International Centre for Mathematics Research. It includes well-known backgrounds to commutative rings and modules. It is self-contained, well written, understandable and enjoyable to read by undergraduate students. This textbook contains a lot of examples, counterexamples and numerous exercises. Because the notion of projective modules is more natural than the notion of free modules, principal ideal domains have been replaced Dedekind domains; this is much less traditional but not more difficult. Beginning students of commutative algebra will likely find the textbook's level of detail to be at one and the same time both off-putting and helpful. In Chapter 1 basic notions and classical results relevant to commutative rings are collected. Contents: 1. Rings and polynomial algebras 1.1 First definitions 1.2 Prime and maximal ideals, integral domains 1.3 Divisibility and irreducible elements 1.4 Polynomial rings in several indeterminates Chapter 2 is dedicated to backgrounds on modules. Contents: 2. Modules 2.1. Definitions and conventions 2.2 Finitely generated modules 2.3 Finitely generated modules over Dedekind domains 2.4 Complement on Dedekind domains *Marek Golasiński (Olsztyn)*

Classification: H45 H75

Keywords: Dedekind domain; Euclidean ring; free module; ideals; polynomial ring; projective module; ring
doi:10.1007/978-3-642-41269-1