

Anyone who has studied “abstract algebra” and linear algebra as an undergraduate can understand this book. This edition has been completely revised and reorganized, without however losing any of the clarity of presentation that was the hallmark of the previous editions.

The first six chapters provide ample material for a first course: beginning with the basic properties of groups and homomorphisms, the topics covered include Lagrange’s theorem, the Noether isomorphism theorems, symmetric groups, G -sets, the Sylow theorems, finite abelian groups, Krull-Schmidt theorem, solvable and nilpotent groups, and the Jordan-Holder theorem.

The middle portion of the book then uses the Jordan-Holder theorem to organize the discussion of extensions (automorphism groups, semi-direct products, the Schur-Zassenhaus lemma, Schur multipliers) and simple groups (simplicity of projective unimodular groups and, after a return to G -sets, a construction of the sporadic Mathieu groups).

The book closes with three chapters on: infinite abelian groups, with emphasis on countable groups; free groups and presentations of groups, coset enumeration, free products, amalgams, and HNN extensions; and a complete proof of the unsolvability of the word problem for finitely presented groups, as well as the Higman imbedding theorem and the undecidability of the isomorphism problem for groups.