

Essential Mathematics for Undergraduates

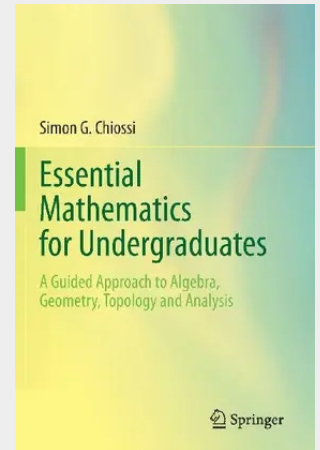
A Guided Approach to Algebra, Geometry, Topology and Analysis

This textbook covers topics of undergraduate mathematics in abstract algebra, geometry, topology and analysis with the purpose of connecting the underpinning key ideas. It guides STEM students towards developing knowledge and skills to enrich their scientific education. In doing so it avoids the common mechanical approach to problem-solving based on the repetitive application of dry formulas. The presentation preserves the mathematical rigour throughout and still stays accessible to undergraduates. The didactical focus is threaded through the assortment of subjects and reflects in the book's structure.

Part 1 introduces the mathematical language and its rules together with the basic building blocks. Part 2 discusses the number systems of common practice, while the backgrounds needed to solve equations and inequalities are developed in Part 3. Part 4 breaks down the traditional, outdated barriers between areas, exploring in particular the interplay between algebra and geometry. Two appendices form Part 5: the Greek etymology of frequent terms and a list of mathematicians mentioned in the book. Abundant examples and exercises are disseminated along the text to boost the learning process and allow for independent work.

Students will find invaluable material to shepherd them through the first years of an undergraduate course, or to complement previously learnt subject matters. Teachers may pick'n'mix the contents for planning lecture courses or supplementing their classes.

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