

Suggested reading

Each module in your degree programme has its own list of recommended reading, compiled by the lecturer for that module; there is no need to obtain any of these books in advance of your arrival at Loughborough. However, we advise all new mathematics students to review their A-level knowledge before arriving. Also, if you want to get a head start by learning about what university mathematics is like and about productive ways to think about it, you might like to study one or more of the following. You should not expect to work through a whole book (except, perhaps, the first one, much of which is an easy read); while these books are all written in a friendly and accessible style, some of them do contain a lot of content. However, studying even a few chapters will help you to be more prepared for the mathematics you will encounter in your lectures.

[How to Study for a Mathematics Degree](#) by Lara Alcock

This book, written by a Loughborough lecturer, is based on research in mathematics education and is the only mathematics-specific guide to undergraduate study. Part 1 covers ways in which university mathematics differs from school mathematics, explaining in detail how students will need to develop and extend their existing thinking skills in order to do well at this new level. Part 2 covers study skills, tailoring this discussion to the requirements of a mathematics degree.

[Numbers and Proofs](#) by R. B. J. T. Allenby

This book is a nice introduction to some ideas from Number Theory, presented in such a way that the reader also has the opportunity to develop skills in problem solving and proving and to understand how mathematicians work with logical statements. It contains useful general information about working with undergraduate mathematics, as well as a lot of good tricks for solving particular types of problem.

[How to Think Like a Mathematician](#) by Kevin Houston

This book also covers ideas about logical thinking and proofs. It tackles these notions more explicitly, discussing types of proof and ways of interacting with definitions, theorems and other logical statements. These ideas are illustrated using the mathematics of numbers, sets and functions, as well as other ideas from earlier mathematics and from everyday life.

[How to Think about Analysis](#) by Lara Alcock

Analysis is a core subject in undergraduate mathematics and this book gives a readable introduction to the ideas that it involves, explaining how they link to a typical student's existing knowledge about sequences, series, continuity, differentiation, integration and the real numbers. It has plenty of illustrations and diagrams, and it contains explicit information on the structures of theories in advanced mathematics and on how a student might go about learning such material.

[Mathematics: A Very Short Introduction](#) by Timothy Gowers

This is a different type of book, intended for a general well-educated audience. However, it contains a lively and readable introduction to the ways that mathematicians see the world, to the questions they ask themselves, and to their approaches to answering those questions.

[Thinking Mathematically](#) by John Mason with Leone Burton and Kaye Stacey

This, again, is a different type of book - it is about problem solving rather than about new mathematical content. The mathematical ideas needed are not hard, but the problems are interestingly challenging, and the book contains a lot of guidance on becoming better at solving novel problems.