



Department of Mathematics

MATHEMATICAL READING LIST

We have compiled this list of books mainly intended for students pursuing a degree in Mathematics; however, anyone who has an interest in mathematics can enjoy them and learn from them. The books were chosen to be accessible to a broad audience having varied degrees of experience with mathematics.

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INTRODUCTION

The range of mathematics books now available is enormous. This list just contains a few suggestions which you should find helpful. Unless otherwise noted, each of the following books should be available at Sims Memorial Library on campus. Most are also available (relatively) cheaply in paperback.

The man who loved only numbers, Paul Hoffman 1999

An excellent biography of Paul Erdős, one of the most prolific mathematicians of all time. Erdős wrote over 1500 papers (about 10 times the normal number for a mathematician) and collaborated with 485 other mathematicians. He had no home; he just descended on colleagues with whom he wanted to work, bringing with him all his belongings in a suitcase. Apart from details of Erdős's life, there is plenty of discussion of the kind of problems (mainly number theory) that he worked on.

Hidden Figures, Margot Lee Shetterly 2016

Beginning with the pre-WWII National Advisory Committee for Aeronautics (NACA) and following both the careers of the female African American mathematicians and the contributions they made that helped America win the war, the book continues through the evolution from NACA to NASA. Many of these same women who helped in the design and testing of bombers and fighter planes went on to play a major role in America's goal to put a man in orbit and eventually land us on the Moon.

Importantly, the book also tells the parallel and tumultuous story of the fight for equality and respect faced by both women and persons of color. The women in the book faced extraordinary hurdles, especially as NACA was located at Langley in Virginia, a state that was one of the most severe in its attachment to segregation and Jim Crow laws.

As Shetterly writes, "It's a story of hope, that even among some of our country's harshest realities—legalized segregation, racial discrimination—there is evidence of the triumph of meritocracy, that each of us should be allowed to rise as far as our talent and hard work can take us."

Fermat's Enigma, Simon Singh 1997

You must read this story of Andrew Wiles's proof of Fermat's Last Theorem, including all sorts of mathematical ideas and anecdotes; there is no better introduction to the world of research mathematics. You must also see the associated BBC Horizon documentary if you get the chance. Singh's later *The Code Book* is not so interesting mathematically, but is still a very good read.

The Music of the Primes, Marcus du Sautoy 2003

This is a wide-ranging historical survey of a large chunk of mathematics with the Riemann Hypothesis acting as a thread tying everything together. The Riemann Hypothesis is one of the big unsolved problems in mathematics -- in fact, it is one of the Clay Institute million dollar problems -- though unlike Fermat's last theorem it is unlikely ever to be the subject of pub conversation. Du Sautoy's book is up to date, and attractively written. Some of the mathematics is tough but the history and storytelling paint a convincing (and appealing) picture of the world of professional mathematics.

Symmetry: a journey into the patterns of nature, Marcus Du Sautoy 2008

This book has had exceptionally good review

The Mathematical Experience, P.J. Davis & R. Hersh 1990

This gives a tremendous foretaste of the excitement of discovering mathematics. A classic.

Beyond Numeracy, J. A. Paulos 1991

Bite-sized essays on fractals, game-theory, countability, convergence, and much more. It is a sequel to his equally entertaining, but less technical, *Numeracy*.

Surely You're Joking Mr Feynman, R.P. Feynman 1992

Autobiographical anecdotes from one of the greatest theoretical physicists of the last century, which became an immediate best-seller. You learn about physics, about life and (most puzzling of all) about Feynman. Very amusing and entertaining.

How Not to Be Wrong: The power of mathematical thinking, Jordan Ellenberg, 2014

Ellenberg uses basic mathematical ideas to expose the hidden structure underlying many real-life situations we may encounter. He writes about the error of assuming all relationships are linear, uncertainty, the correct and incorrect interpretations of inference, expectation, geometry, and the concept of regression. The ideas are approached through real questions about where to put the armor on an airplane, Bible codes, the Baltimore stockbroker con, error-correcting codes, playing the lottery vs. winning the lottery, eugenics, smoking and lung cancer, public opinion, elections, and more. All of this is done with a good dose of wit and humor. His goal is to help the reader see that “there is structure in the world, that we can hope to understand some of it and not just gape at what our senses present to us.”

Shape: The hidden geometry of information, biology, strategy, democracy, and everything else, Jordan Ellenberg, 2021

This is NOT the geometry you learned in high school. Here, Ellenberg consider how a democracy should best choose its representatives, how to stop a pandemic, how computers learn to play GO, what kids should learn in school if they really want to learn to think, and more. Entertaining, informative, and very readable.

The Art of More: How mathematics created civilization, Michael Brooks, 2021 [\[On order for Sims Library, June 2022\]](#)

From learning to count, tax collection, the beginnings of banking and trade, the industrial revolution, electric lights, landing men on the moon, to modern computing and information theory, Brooks explains the mathematical revolutions that drove our human history.

TOPICS IN SPECIFIC MATHEMATICAL AREAS

Students study mathematics for many reasons and at Southeastern Louisiana University we offer five concentrations in Mathematics: Business/Actuarial, Education, Industrial, Scientific Computing, and Pure. The first book in this list is for all students. The remaining books are directed towards specific concentration areas.

How to Succeed in College Mathematics, R.M. Dahlke, 2008

This book is written for the college mathematics major. There is a wealth of information, techniques and practices to help with reading, writing, and studying mathematics.

My Life as a Quant, E. Derman 2004

A non-technical, biographical introduction to financial engineering and what types of work financial engineers do.

How to Solve It, G. Polya, 1945

A study of heuristics—methods and rules used to discover and prove mathematics—from a pedagogical perspective. A classic.

The Chicago Guide to Your Career in Science: A toolkit for students and postdocs, A. Bloomfield and E. El-Fakahany, 2008

A how-to guide for pursuing a career in science. It includes tips for conducting research, how to create a poster or conference presentation, how to write a journal article, tips for finding your first job, etc.

A Primer of Mathematical Writing, Steven G. Krantz, 1991

This book focuses on how to write in the professional mathematics environment. An excellent resource for graduate students and professionals.

Math into LaTeX: An introduction to LaTeX and AMS-LaTeX, George Grätzer, 2000

For those who will need to write (and more importantly type!) mathematical documents, this is an excellent resource to the workings of the scientific typesetting software LaTeX. From the basics to the highly advanced, this book will answer your questions from typing anything from a simple equation to an entire book.

Motherhood: The Elephant in the Laboratory, E. Monsoon, 2008

Thirty-four female scientists share their experiences on work-life balance and raising children in a scientific career field. Their stories range from the 1970s to the 2000s.

Why So Slow? The Advancement of Women, V. Valian, 199.

Data from psychology, sociology, economics, and biology is used to create statistical documentation to discuss trends on the professional advancement of women and men.

JUST FOR FUN

Uncle Petros and Goldbach, Apostolos Doxiadis, 2000.

A novel, this book revolves about family, chess, Mathematics, and, of course, the Goldbach Conjecture.

The summaries of several texts in this list are taken from the *Mathematical Reading List* of the Goldbach