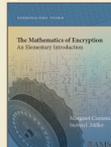


# IT'S A MATHEMATICAL WORLD

The fascinating world of mathematics is constantly at work around us, manifesting in our lives as both the art of pure thought and a universally applicable science. From probability theory to healthcare modelling, modern cryptography to oceanography, the titles below showcase the elegance and functionality of mathematics in the world at large.



## THE MATHEMATICS OF ENCRYPTION



### An Elementary Introduction

Margaret Cozzens, *DIMACS, Rutgers University, Piscataway, NJ*, and Steven J. Miller, *Williams College, Williamstown, MA*

This book provides a historical and mathematical tour of cryptography, from classical ciphers to quantum cryptography. The authors introduce just enough mathematics to explore modern encryption methods, with nothing more than basic algebra and some elementary number theory being necessary. Unlike many books in the field, this book is aimed at a general liberal arts student, but without losing mathematical completeness.

**Mathematical World**, Volume 29; 2013; 332 pages; Softcover; ISBN: 978-0-8218-8321-1; List US\$49; AMS members US\$39.20; Order code MAWRDL/29



## MATHEMATICAL METHODS IN IMMUNOLOGY



Jerome K. Percus, *Courant Institute of Mathematics, New York, NY*, and Department of Physics, *New York University, NY*

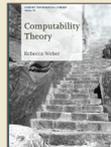
The complexity of the mammalian adaptive immune system calls for its encapsulation by mathematical models, and this book aims at the associated description and analysis. In the process, it introduces tools that should be in the armory of any current or aspiring applied mathematician, in the context of, arguably, the most effective system nature has devised to protect an organism from its manifold invisible enemies.

Titles in this series are co-published with the Courant Institute of Mathematical Sciences at New York University.

**Courant Lecture Notes**, Volume 23; 2011; 111 pages; Softcover; ISBN: 978-0-8218-7556-8; List US\$32; AMS members US\$25.60; Order code CLN/23



## COMPUTABILITY THEORY



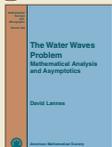
Rebecca Weber, *Dartmouth College, Hanover, NH*

What can we compute—even with unlimited resources? Are computations necessarily drastically limited, not just in practice, but theoretically? In this new book, Rebecca Weber addresses these questions, which lie at the heart of computability theory. The reader will gain a firm grounding in the fundamentals of the subject as well as an overview of currently active areas of research. Filled with ample examples, exercises, and extensive explanations, this book is suitable as both a textbook or for independent study with few prerequisites.

**Student Mathematical Library**, Volume 62; 2012; 203 pages; Softcover; ISBN: 978-0-8218-7392-2; List US\$37; AMS members US\$29.60; Order code STML/62



## THE WATER WAVES PROBLEM



### Mathematical Analysis and Asymptotics

David Lannes, *Ecole Normale Supérieure et CNRS, Paris, France*

In spite of recent intense activity surrounding the water waves equations, there exists no self-contained reference dealing with the basic theory of these equations. The present volume admirably fills this gap in the literature by proposing a simple and robust framework that allows readers to address important issues raised by the water waves equations.

**Mathematical Surveys and Monographs**, Volume 188; 2013; 321 pages; Hardcover; ISBN: 978-0-8218-9470-5; List US\$98; AMS members US\$78.40; Order code SURV/188



## MODELLING IN HEALTHCARE



The Complex Systems Modelling Group (CSMG), *The IRMACS Center, Simon Fraser University, Burnaby, BC, Canada*

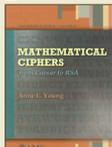
"How many patients will require admission to my hospital in two days? How widespread will influenza be in my community in two weeks? These and similar questions are the province of Modelling in Healthcare. This new volume ... uses plain language, sophisticated mathematics and vivid examples to guide and instruct ... [T]he content and the logic are readily understandable by modelers, administrators and clinicians alike. This volume will surely serve as their common and thus preferred reference for modeling in healthcare for many years."

— Timothy G. Buchman, Ph.D., M.D., FACS, FCCM

2010; 218 pages; Hardcover; ISBN: 978-0-8218-4969-9; List US\$69; AMS members US\$55.20; Order code MBK/74



## MATHEMATICAL CIPHERS



### From Caesar to RSA

Anne L. Young, *Loyola College in Maryland, Baltimore, MD*

This historical look at the use of ciphers to encode messages carries great relevance with today's emphasis on information security. Anne L. Young keeps the analysis focused on the cipher, bringing in mathematical theory when needed. The text culminates with discussion of the RSA cipher to protect information on the Internet. JavaScript programs are available to assist with exercises at the end of each chapter.

**Mathematical World**, Volume 25; 2006; 159 pages; Softcover; ISBN: 978-0-8218-3730-6; List US\$30; AMS members US\$24; Order code MAWRDL/25



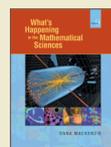
## PROBABILITY TALES



Charles M. Grinstead, *Swarthmore College, PA*, William P. Peterson, *Middlebury College, VT*, and J. Laurie Snell, *Dartmouth College, Hanover, NH*

This book discusses probability theory through a detailed examination of four topics that receive close attention in the popular press: streaks, the stock market, lotteries, and fingerprinting. The depth of the analysis of these topics distinguishes the authors' approach from that of other books discussing real-world applications of probability and statistics. The book serves as an ideal supplement to an introductory text on probability.

**Student Mathematical Library**, Volume 57; 2011; 237 pages; Softcover; ISBN: 978-0-8218-5261-3; List US\$42; AMS members US\$33.60; Order code STML/57

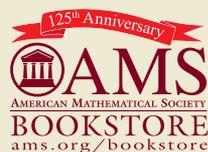


## WHAT'S HAPPENING IN THE MATHEMATICAL SCIENCES, VOLUME 9

Dana Mackenzie

This book looks at some highlights of the most recent developments in pure and applied mathematics. These include the mathematics behind stories that made headlines, as well as fascinating mathematical vignettes that never made it into the newspapers. Topics covered in this volume include the mathematics surrounding natural and manmade disasters, such as the 2009 H1N1 outbreak and the 2011 tsunami in Japan, as well as developments in the pure mathematical realm, including the 2012 solutions to the Willmore and Lawson Conjectures. The stories in this book invite the reader into the exciting world of modern mathematics, which teems with the thrill of discovery and the anticipation of what is still to come.

**What's Happening in the Mathematical Sciences**, Volume 9; 2013; 127 pages; Softcover; ISBN: 978-0-8218-8739-4; List US\$25; AMS members US\$20; Order code HAPPENING/9



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