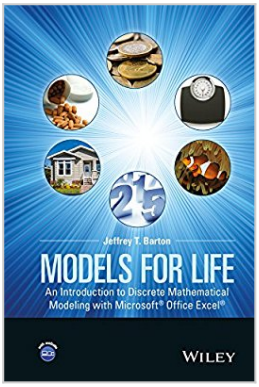

Models for Life: An Introduction to Discrete Mathematical Modeling with Microsoft Office Excel

By Jeffrey T. Barton

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Features an authentic and engaging approach to mathematical modeling driven by real-world applications

With a focus on mathematical models based on real and current data, *Models for Life: An Introduction to Discrete Mathematical Modeling with Microsoft® Office Excel®* guides readers in the solution of relevant, practical problems by introducing both mathematical and Excel techniques.

The book begins with a step-by-step introduction to discrete dynamical systems, which are mathematical models that describe how a quantity changes from one point in time to the next. Readers are taken through the process, language, and notation required for the construction of such models as well as their implementation in Excel. The book examines single-compartment models in contexts such as population growth, personal finance, and body weight and provides an introduction to more advanced, multi-compartment models via applications in many areas, including military combat, infectious disease epidemics, and ranking methods. *Models for Life: An Introduction to Discrete Mathematical Modeling with Microsoft® Office Excel®* also features:

- A modular organization that, after the first chapter, allows readers to explore chapters in any order
- Numerous practical examples and exercises that enable readers to personalize the presented models by using their own data
- Carefully selected real-world applications that motivate the mathematical material such as predicting blood alcohol concentration, ranking sports teams, and tracking credit card debt
- References throughout the book to disciplinary research on which the presented models and model parameters are based in order to provide authenticity and resources for further study
- Relevant Excel concepts with step-by-step guidance, including screenshots to help readers better understand the presented material

- Both mathematical and graphical techniques for understanding concepts such as equilibrium values, fixed points, disease endemicity, maximum sustainable yield, and a drug's therapeutic window
- A companion website that includes the referenced Excel spreadsheets, select solutions to homework problems, and an instructor's manual with solutions to all homework problems, project ideas, and a test bank

The book is ideal for undergraduate non-mathematics majors enrolled in mathematics or quantitative reasoning courses such as introductory mathematical modeling, applications of mathematics, survey of mathematics, discrete mathematical modeling, and mathematics for liberal arts. The book is also an appropriate supplement and project source for honors and/or independent study courses in mathematical modeling and mathematical biology.

Jeffrey T. Barton, PhD, is Professor of Mathematics in the Mathematics Department at Birmingham-Southern College. A member of the American Mathematical Society and Mathematical Association of America, his mathematical interests include approximation theory, analytic number theory, mathematical biology, mathematical modeling, and the history of mathematics.

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Editorial Review

From the Back Cover

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