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Modeling differential equations in biology, by Clifford Henry Taubes, Prentice Hall, Upper Saddle River, NJ, 2001, 528 pp., $86.00, ISBN 0-13-017325-8

There is no shortage of introductory texts on differential equations, nor of introductory math books for biologists. But Taubes' book is a welcome addition. While the presentation of the mathematics is fairly conventional, the exposition is exceptionally clear, and each chapter is followed by a "Lessons" section summarizing the key ideas covered. However, what distinguishes this text from its competitors are the "Readings" that follow: a collection of research papers the author has gleaned from the literature to complement each chapter. These cover a wide variety of topics, sometimes only peripherally related to the subject matter of the chapter, but never mind, for they constitute an interesting, if idiosyncratic, medley.

Beginning with simple exponential growth, the text covers the basics of ordinary differential equations, including phase plane analysis and stability of linear and nonlinear systems. Partial differential equations are introduced via diffusion and advection models. Separation of variables is introduced by a separate chapter that constructs a fisheries model, followed by a more detailed exposition in the following chapter. The chapter on pattern formation by Turing instabilities is rather cursory compared to the Readings, but the emphasis on diffusion-advection patterns is unusual and appropriate for ecological applications. I especially enjoyed the three chapters on fast and slow time scaling, estimating time scales in dynamic problems, and models for biological switches. The book concludes with short chapters on testing for periodicities in data and on chaotic systems.

One quibble I have is the small number of exercises at the end of each chapter, most of which do not address much of the content in the Readings. However, there is a collection of "extra exercises" at the end of the book, many of which include answers. I would hope that in the next edition, Taubes would try to integrate the exercises more closely with his selections from the literature.

Finally, it would not be fair to compare this book with the classic text by J. D. Murray, *Mathematical biology*, which is far more comprehensive and advanced, nor with Edelstein-Keshet's *Introduction to mathematical biology*, which is more intuitive and aimed at a less mathematical audience. Taubes' text is intended to be a pedagogical introduction to biological modeling for mathematics students, and in this it succeeds admirably, not least because of the exposure it provides to the current literature.

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