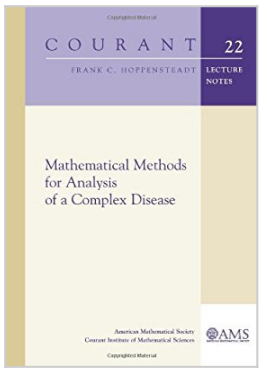


# Mathematical Methods for Analysis of a Complex Disease (Courant Lecture Notes)

*By Frank C. Hoppensteadt*



**Mathematical Methods for Analysis of a Complex Disease (Courant Lecture Notes)** By Frank C. Hoppensteadt

Complex diseases involve most aspects of population biology, including genetics, demographics, epidemiology, and ecology. Mathematical methods, including differential, difference, and integral equations, numerical analysis, and random processes, have been used effectively in all of these areas. The aim of this book is to provide sufficient background in such mathematical and computational methods to enable the reader to better understand complex systems in biology, medicine, and the life sciences. It introduces concepts in mathematics to study population phenomena with the goal of describing complicated aspects of a disease, such as malaria, involving several species. The book is based on a graduate course in computational biology and applied mathematics taught at the Courant Institute of Mathematical Sciences in fall 2010. The mathematical level is kept to essentially advanced undergraduate mathematics, and the results in the book are intended to provide readers with tools for performing more in-depth analysis of population phenomena. Titles in this series are co-published with the Courant Institute of Mathematical Sciences at New York University.

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