Ingalls, Brian. 2012. *Mathematical Modelling in Systems Biology*. Applied Mathematics, University of Waterloo. Preprint. 396 pp. http://www.math.uwaterloo.ca/~bingalls/MMSB/ . Accessed 12 March 2023.

This text provides an introduction to dynamic mathematical modeling of cellular processes. The emphasis is on using computational tools to investigate models of cellular phenomena. Discussion of simple biochemical networks serves to illustrate some basic analytic techniques (including separation of time scales, phase plane analysis, and bifurcation analysis). The text then addresses models in four biological domains: metabolic networks, signal transduction pathways, gene regulatory networks and electrophysiology.

This set of notes for a book is very impressive with many, many areas of biology touched and modelled. The first four chapters cover basic mathematical modeling in molecular systems biology and should be read sequentially while the last four chapters covers topics and can be read separately.

Areas covered include dynamical mathematical models, chemical reaction networks, metabolic networks, signal transduction pathways, electrophysiology, and much more.