

## Splines and compartment models: an introduction

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### Abstrak

This book presents methods of mathematical modeling from two points of view. Splines provide a general approach while compartment models serve as examples for context related to modeling. The preconditions and characteristics of the developed mathematical models as well as the conditions surrounding data collection and model fit are taken into account. The substantial statements of this book are mathematically proven. The results are ready for application with examples and related program codes given. In this book, splines are algebraically developed such that the reader or user can easily understand and vary the numerical construction of the different kinds of spline functions. The classical compartment models of the pharmacokinetics are systematically analyzed and connected with lifetime distributions. As such, parameter estimation and model fit can be treated statistically with a varied minimum chi-square method. This method is applicable for single kinetics and also allows the calculation of average kinetics.--