

## PREFACE

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The aim of this book is to provide basic stochastic analysis techniques for mathematical finance. It is intended for those who want to study mathematical finance but have a limited background in probability theory and stochastic analysis. The writing of the book started seven years ago after I taught mathematical finance to graduate students and practitioners for several years. Most of my students have a Master's degree in science or engineering but had only taken one or two entry level probability courses prior to my course. My initial approach for teaching such a course was to focus on financial models and aspects of modelling techniques. I soon found that the lack of the sound knowledge in stochastic analysis often prevented students from fully understanding and mastering financial models, and the implementation of these models. I ended up spending much of the class time teaching stochastic analysis instead. I feel from that experience that a short course on stochastic analysis with an emphasis on techniques and methods used in financial modelling would greatly help students with a limited probability background to better study mathematical finance. This book is an attempt to meet such a need. To serve that purpose, I have written this book to be self-contained and to use many well-known stochastic models in finance for illustration. My hope is that after reading the book, readers are able to understand the technical aspects of most stochastic models in finance and are able to use this book

as a stepping stone to learn more advanced topics in stochastic analysis for mathematical finance.

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