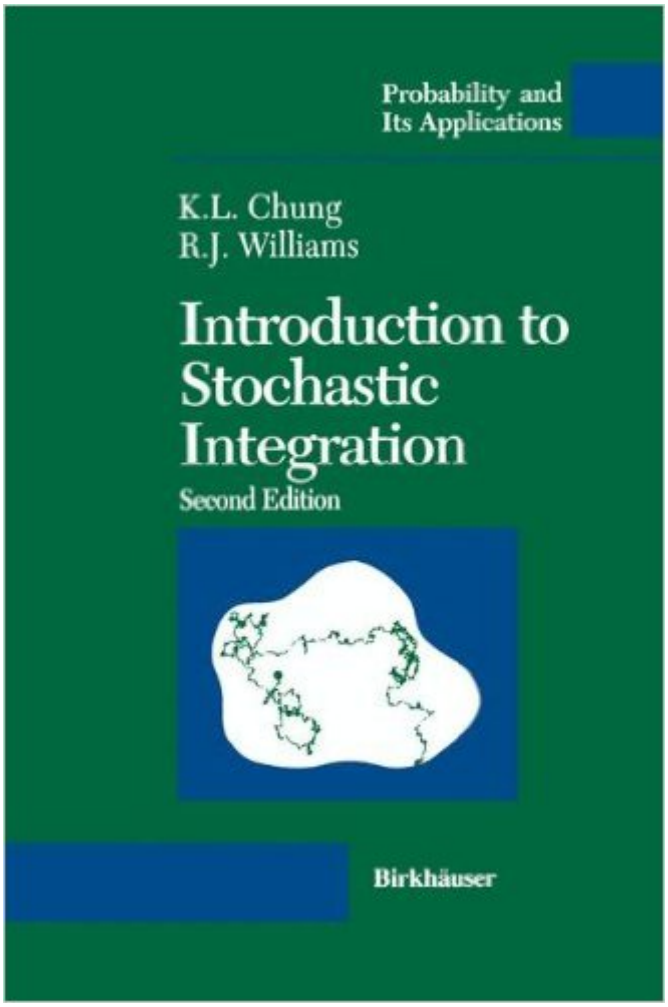
# Introduction To Stochastic Integration (Probability And Its Applications)



## Synopsis

This is a substantial expansion of the first edition. The last chapter on stochastic differential equations is entirely new, as is the longish section Â§9.4 on the Cameron-Martin-Girsanov formula. Illustrative examples in Chapter 10 include the warhorses attached to the names of L. S. Ornstein, Uhlenbeck and Bessel, but also a novelty named after Black and Scholes. The Feynman-Kac-Schrooinger development (Â§6.4) and the material on reÂ- flected Brownian motions (Â§8.5) have been updated. Needless to say, there are scattered over the text minor improvements and corrections to the first edition. A Russian translation of the latter, without changes, appeared in 1987. Stochastic integration has grown in both theoretical and applicable importance in the last decade, to the extent that this new tool is now sometimes employed without heed to its rigorous requirements. This is no more surprising than the way mathematical analysis was used historically. We hope this modest introduction to the theory and application of this new field may serve as a text at the beginning graduate level, much as certain standard texts in analysis do for the deterministic counterpart. No monograph is worthy of the name of a true textbook without exercises. We have compiled a collection of these, culled from our experiences in teaching such a course at Stanford University and the University of California at San Diego, respectively. We should like to hear from readers who can supply VI PREFACE more and better exercises.

## Book Information

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## Customer Reviews

This book provides a very easy to read account of the development of the stochastic integral. While concentrating on integrators which are continuous local martingales, and thus lacking the full generality of treatment to be found in, for example Dellacherieand Meyer, the basic constructions are all performed in a fashion which is readily extensible to the more general case. From a teaching point of view this is beneficial if the more general case is to be studied subsequently. Although the arguments can be considerably simplified for specific special cases (e.g. integration with respect to Brownian Motion only), it is useful to understand how the construction fits into the more general case, which also makes less of a discontinuity for the reader who is subsequently to study the general discontinuous theory!The arguments are presented carefuly, for example all of the necesary conditions being checked explicitly in places where important theorems are to be applied, and there are none of the annoying statements which plague books on Stochastic Calculus along the lines "the reader can readily check", or "see problem 21.2.43" in the middle of proofs. Additionally very few lines are "skipped" in the proofs; while this does mean that they are lacking in brevity, it is strongly to be encouraged when a complex subject is presented to the novice. When the concepts are understood sufficiently well the reader can easily compile "brief" proofs on his own (as a form of revision), but working the other way round frequently, in my experience of supervising a similar course, leads to misapprehensions about the conditions for applying essential theorems.

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