Preface

This book is the result of courses we have given for more than a decade to upper level undergraduate students and to graduate students majoring in mathematics, applied mathematics, statistics, and engineering. In this book the reader will encounter the basic concepts that span the initial notions of fuzzy sets to more advanced notions of fuzzy differential equation and dynamical systems. We follow, in our ordering of topics, a pedagogical unfolding beginning with classical theory such as set theory and probability in such a way that these serve as an opening into the fuzzy case. Moreover, the classical differential and integral calculus is the beginning step from which fuzzy differential and integral analysis are developed.

There are various derivatives and integrals that exist and applied in the context of fuzzy functions. These are clearly delineated and interpreted in our presentation of fuzzy integral and differential equations.

Each of the major topics is accompanied with examples, worked exercises and exercises to be completed. Many applications of our concept to real problems are found throughout the book.

Even though this book may be, and has been, used as a textbook for various courses, in it are sufficient ideas for beginning the research projects in fuzzy mathematics. It is the hope of the authors that our joy, passion, and respect for all who seriously the study of fuzzy mathematics, modeling, and applications, emerges through the written page.

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