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**Ordinary and partial differential equations. With CD-ROM.**

Boca Raton, FL: CRC Press (ISBN 978-1-4665-1500-0/hbk). xiv, 629 p. (2013).

As the authors point in the preface, “the primary motivation for writing this textbook is that, to our knowledge, there has not been published a comprehensive textbook that covers both ODE and PDE. A professor who teaches ODE using this book can use the PDE sections to complement the main ODE course. Professors teaching PDE very often face the situations with students, despite having an ODE as prerequisite, do not remember the techniques for solving ODE and thus can’t do well in the PDE course.” The book is divided into two parts dealing with ordinary and partial differential equations. Material that can be found in most standard books on ODEs is presented in Chapters 1–6. Chapters 1–3 present solution techniques for first and second order differential equations, along with fundamental methods for linear equations and systems. Chapter 4 deals with boundary value problems and Sturm-Liouville problems, whereas an introduction to qualitative methods of analysis and stability theory is provided in Chapter 5. A brief account of Laplace transform can be found in Chapter 6. The first part concludes with material on two topics which are not so popular in modern textbooks but have widely been discussed in classical older texts on ODEs: basic facts on integral equations and on series solutions of ODEs, Bessel and Lagrange equations are collected in Chapters 7 and 8. Part II is dedicated to PDEs. It starts with the discussion of one- and two-dimensional hyperbolic equations in Chapters 10 and 11, proceeds with fundamental methods for one- and two-dimensional parabolic equations in Chapters 12 and 13 and concludes with the analysis of elliptic equations in Chapter 14. In this part, the authors stress applications of the Fourier method for solving PDEs and do not discuss other important techniques like the method of characteristics, similarity methods, Green’s functions, Laplace transforms, perturbation methods, etc. The text uses software developed by the authors and provided on a CD which accompanies the book. For ODEs, the program plots the graph of the analytical solution obtained by the readers against the numerical solution suggested by the program itself. More options are available for PDEs – one can analyze the dependence of the solutions on parameters, the accuracy of the solution, the speed of the convergence of a series, etc. The text may suit goals of instructors looking for a combination of fundamentals of ODEs and PDEs in one course and can be also used as supplementary reading.

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*Classification:* I75

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