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From the Preface, “This text is intended for a one-semester undergraduate course in ordinary differential equations. There are additional exercises or computer projects at the ends of many of the chapters. The computer projects often require a basic knowledge of programming. All of these exercises and projects are more substantial in nature and allow the exploration of new results and theory. Sage (sagemath.org) is a free, open source, software system for advanced mathematics, which is ideal for assisting with a study of ordinary differential equations. Sage can be used either on your own computer, a local server, or on SageMathCloud (https://cloud.sagemath.com). The Sage code has been tested for accuracy with the most recent version available at this time: Sage Version 7.3 (released 2016–08–5).”

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This text has it all, excellent narrative, interwoven modeling applications to motivate students, SAGE code, qualitatitve analysis, and solution techniques. It runs from first order through the usual second order differential equations, systems, and nonlinear, numerical methods, and analytic tchniques, with a fine section on Laplace transforms, ending with convolution applications. There are proofs that are readable. The last chapter consists of rich hints and answers.

This book IS the future for Differential Equations textbooks. It is thoroughly and very nicely written, invested in applications, rich in detail and theory, supplemented with SAGE code, and it is FREE as is, SAGE, the computer algebra system it features.

Keywords: differential equation, technique, theory, proofs, model, text, SAGE, free.