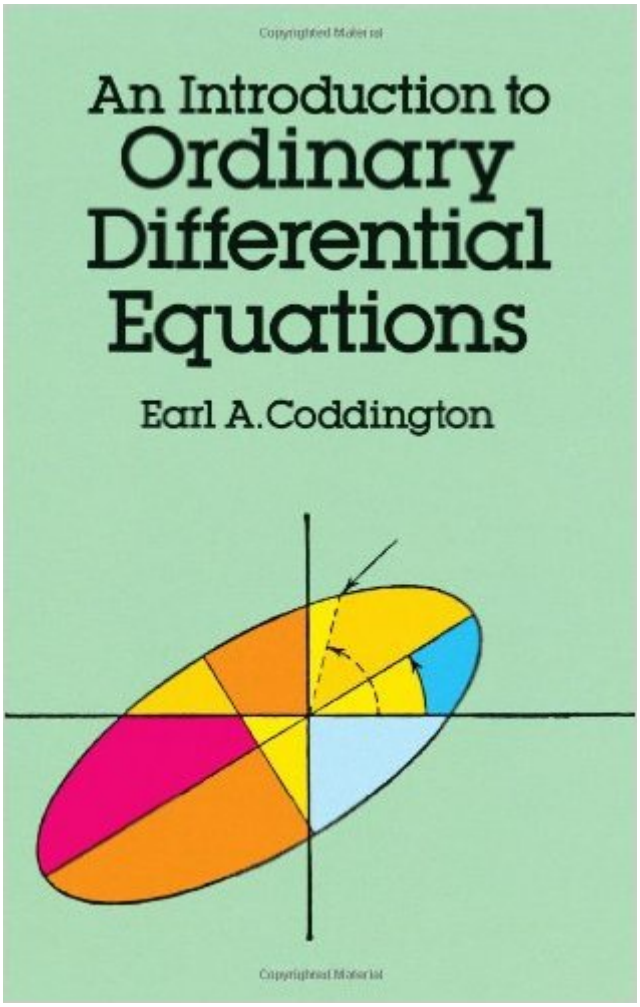
An Introduction To Ordinary Differential Equations (Dover Books On Mathematics)



Synopsis

"Written in an admirably cleancut and economical style." â ” Mathematical Reviews.This concise text offers undergraduates in mathematics and science a thorough and systematic first course in elementary differential equations. Presuming a knowledge of basic calculus, the book first reviews the mathematical essentials required to master the materials to be presented.The next four chapters take up linear equations, those of the first order and those with constant coefficients, variable coefficients, and regular singular points. The last two chapters address the existence and uniqueness of solutions to both first order equations and to systems and n-th order equations.Throughout the book, the author carries the theory far enough to include the statements and proofs of the simpler existence and uniqueness theorems. Dr. Coddington, who has taught at MIT, Princeton, and UCLA, has included many exercises designed to develop the student’s technique in solving equations. He has also included problems (with answers) selected to sharpen understanding of the mathematical structure of the subject, and to introduce a variety of relevant topics not covered in the text, e.g. stability, equations with periodic coefficients, and boundary value problems.

Book Information

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Customer Reviews

This classic book appeared for the first time in the early 1960’s, and the world is still waiting to see a better elementary text on ODE’s.It begins with a chapter covering the necessary background to understand the material, and then proceeds to study the first order linear equation. The next step is

the 2nd order linear equation and then the n-th order linear equation. The most appreciated feature of this book is that the author shows that the method (an explicit formula!) for solving the n-th order equation is essentially the same as the 1st order one. After solving completely the linear equation the author moves on to the non-linear case, again up to the n-th order. The idea seems quite simple, yet no other customary text introduces ODE's this way. All the other authors begin with the 1st order equation mixing up the linear and the non-linear cases, and continue their exposition following the same fashion, leading the student to misunderstand a very subtle and important feature of analysis (and mathematics): the great difference between linearity and non-linearity. The way this book is written shows clearly this crucial phenomenon.Another valuable feature of this book is its complex-number approach which leads to straightforward computation of explicit formulas for the solutions of linear equations. Other texts give no more than the sketch of some methods which have to be performed every single time, and most of them don't even justify those methods rigorously.Conclusion: Superb book. Excellent as a course text.Please read my other reviews at my member page (click on my name above).

This book was used in my "Introduction to Ordinary Differential Equations" class when I was a senior at Louisiana State. I found it to be one of the better texts in differential equations that I have come across. The first chapter is mainly the prerequisite calculus, then the next chapter jumps into first order equations. Then unlike most other books, he jumps straight into second order problems. the biggest plus in the book is the ready use of complex analysis throughout, something which most books avoid altogether, thus allowing the student to get only a partial understanding of the theory needed to solve more advanced problems. Answers are included at the back of the book, problems are clear and well-explained, and there are enough advanced topics covered later in the book (including celestial mechanics) to keep the course interesting for students of all kinds.

I took an undergraduate ordinary differential equations class and felt I grasped the subject quite well. I wanted an inexpensive text that I could review the subject with and I decided that I would give Coddington's book a try. I was really pleased with the order in which the text was presented which differed from the course I had taken. The author's seem to put things in a very logical order versus some texts I have seen which really confuse you by the order in which the subjects are presented. Another point that I have to make is the depth that the book has. I learned much more in reviewing this text than I ever did in any diff eq class. It shows the distinction between linear and non-linear diff eq's and covered many other methods which I had not learned previously. This is a great text as a

"refresher" or as a course text. I just wish I would have previously used this text to learn ordinary differential equations.

I think this is one of the best books on the subject. If you really want to understand differential equations then you have to read an analysis book like this. The numerical recipes/methods books will teach you only how to program the computer to solve the the equations. This one will teach you WHY it works.

I think that this book is excellent as a textbook for an Ordinary Differential Equations class. There are plenty of "compute-the-solution" exercises, but there are also a large amount of theoretical exercises. The book is very concise, but it is still legible. It is also very cheap, so students won't mind buying it :)I think that this book also works well when not used as a textbook. If you are using this to learn ODE's by yourself, you really need to do some of the exercises since they are essential to the book. I do think that it is $11 well spent, since it teaches all of the basics of ODE's.In terms of the topics covered, here they are:- Linear, homogeneous, nth-order equations with constant coefficients.- Linear, homogeneous, 1st and 2nd order equations with non-constant coefficients.- Linear, non-homogeneous, nth-order equations with constant coefficients.- Lienar, non-homogeneous, 1st and 2nd order equations with non-constant coefficients.- Solutions to ODEs with regular singular points.- Series solutions.- Existence and uniqueness to linear equations.- Non-linear first order equations.- Existence and uniqueness to first order equations.

This book is a holy bible for introduction to differential equations. It is easy to understand and the problems are quite challenging. Dr Coddington knows how to explain the material by systematically order(Easy to tough). His book is not easy to figure out if you just sit without paper,pen and think. But once you are understand his book, no one can teach you differential equations for undergarduate level. Other suggested reading are Theory of ordinary differential equations, Linear ordinary differential equations by Earl Coddington(Both of them), Ordinary Differential Equations by Fritz John,and Ordinary Differential Equations by Edward L Ince. Once the most important statement is: YOU KNOW DIFFERENTIAL EQUATIONS IF YOU UNDERSTAND WHAT IS GOING ON IN CODDINGTON'S AND FRITZ JOHN BOOKS.

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