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**Excellent introductory text focuses on complex numbers, determinants, orthonormal bases, symmetric and hermitian matrices, first order non-linear equations, linear differential equations, Laplace transforms, Bessel functions, more. Includes 48 black-and-white illustrations. Exercises with solutions. Index. The material presented in this**

**book corresponds to a semester-long course, "Linear Algebra and Differential Equations", taught to sophomore students at UC Berkeley. In contrast with typical undergraduate texts, the book offers a unifying point of view on the subject, namely that linear algebra solves several clearly-posed classification problems about such geometric objects as quadratic forms and linear transformations. This attractive viewpoint on the classical theory agrees well with modern tendencies in advanced mathematics and is**

**shared by many research mathematicians. However, the idea of classification seldom finds its way to basic programs in mathematics, and is usually unfamiliar to undergraduates. To meet the challenge, the book first guides the reader through the entire agenda of linear algebra in the elementary environment of two-dimensional geometry, and prior to spelling out the general idea and employing it in higher dimensions, shows how it works in applications such as linear ODE systems or stability of equilibria.**

**Appropriate as a text for**

**regular junior and honors sophomore level college classes, the book is accessible to high school students familiar with basic calculus, and can also be useful to engineering graduate students. Skillfully organized introductory text examines origin of differential equations, then defines basic terms and outlines the general solution of a differential equation. Subsequent sections deal with integrating factors; dilution and accretion problems; linearization of first order systems; Laplace**

**Transforms; Newton's  
Interpolation Formulas, more.  
The book comprises a  
rigorous and self-contained  
treatment of initial-value  
problems for ordinary  
differential equations. It  
additionally develops the  
basics of control theory, which  
is a unique feature in current  
textbook literature. The  
following topics are  
particularly emphasised: •  
existence, uniqueness and  
continuation of solutions, •  
continuous dependence on  
initial data, • flows, •  
qualitative behaviour of  
solutions, • limit sets, •**

**stability theory, • invariance principles, • introductory control theory, • feedback and stabilization. The last two items cover classical control theoretic material such as linear control theory and absolute stability of nonlinear feedback systems. It also includes an introduction to the more recent concept of input-to-state stability. Only a basic grounding in linear algebra and analysis is assumed. Ordinary Differential Equations will be suitable for final year undergraduate students of mathematics and appropriate for beginning**

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presents a carefully balanced and sound integration of the two topics. It promotes in-depth understanding rather than rote memorization, enabling students to fully comprehend abstract concepts and leave the course with a solid foundation in linear algebra. Flexible in format, it explains concepts clearly and logically with an abundance of examples and illustrations, without sacrificing

level or rigor. A vast array of problems supports the material, with varying levels from which students/instructors can choose.

This "Textbook of B.Sc Mathematics" for the students studying third year first semester in all universities of Telangana state was first published in the year 1988 and has undergone several editions and many reprints.

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written text, Richard Bronson starts with the concrete and computational, and leads the reader to a choice of major applications. The first three chapters address the basics: matrices, vector spaces, and linear transformations. The next three cover eigenvalues, Euclidean inner products, and Jordan canonical forms, offering possibilities that can be tailored to the instructor's taste and to the length of the course. Bronson's approach to computation is modern and algorithmic, and his theory is clean and straightforward. Throughout,

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*the views of the theory presented are broad and balanced and key material is highlighted in the text and summarized at the end of each chapter. The book also includes ample exercises with answers and hints.*

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*Provides a balanced approach to computation and theory by offering computational algorithms for finding*

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discusses mathematical  
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**Linearity plays a critical role in the study of elementary differential equations; linear differential equations,**

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**motivating problems that are applied in nature. The following chapter develops the mathematics necessary to solve these problems and explores related topics further. Even in more theoretical developments, we use an example-first style to build intuition and understanding before stating or proving general results. Over 100 figures provide visual demonstration of key ideas; the use of the computer algebra system Maple and Microsoft**

**Excel are presented in detail throughout to provide further perspective and support students' use of technology in solving problems. Each chapter closes with several substantial projects for further study, many of which are based in applications. Errata sheet available at: [www.oup.com/us/companion.websites/9780195385861/pdf/errata.pdf](http://www.oup.com/us/companion.websites/9780195385861/pdf/errata.pdf)**

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chapters, this edition  
begins with an overview of  
an equation that involves a



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**properties of Laplace transform in detail and examine as well the applications of Laplace transforms to differential equations. This book is a valuable resource for mathematicians, students, and research workers. Written by a mathematician /engineer/scientist author who brings all three perspectives to the book. This volume offers an extremely easy-to-read and easy-to-comprehend exploration of both ordinary differential equations and linear algebra--motivated**

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***There are many excellent texts on elementary differential equations designed for the standard sophomore course. However, in spite of the fact that most courses are one semester in length, the texts have evolved into calculus-like presentations that include a large collection of methods and applications, packaged with student manuals, and Web-based***



**notes, projects, and supplements. All of this comes in several hundred pages of text with busy formats. Most students do not have the time or desire to read voluminous texts and explore internet supplements. The format of this differential equations book is different; it is a one-semester, brief treatment of the basic ideas, models, and solution methods. Its limited coverage places it somewhere between an outline and a detailed book. I have tried to write concisely, to the point, and in plain language. Many**

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***Ordinary differential equations (ODEs) and linear algebra are foundational postcalculus mathematics courses in the sciences. The***

***goal of this text is to help students master both subject areas in a one-semester course. Linear algebra is developed first, with an eye toward solving linear systems of ODEs. A computer algebra system is used for intermediate calculations (Gaussian elimination, complicated integrals, etc.); however, the text is not tailored toward a particular system. ÷ Ordinary Differential Equations and Linear Algebra: A Systems Approach ÷ systematically develops the linear algebra needed to solve systems of***

***ODEs and includes over 15 distinct applications of the theory, many of which are not typically seen in a textbook at this level (e.g., lead poisoning, SIR models, digital filters). It emphasizes mathematical modeling and contains group projects at the end of each chapter that allow students to more fully explore the interaction between the modeling of a system, the solution of the model, and the resulting physical description.÷***  
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This book, written for undergraduate engineering and applied mathematics students, incorporates a broad coverage of



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