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| Autore | Ahmad Shair |
| Titolo | A Textbook on Ordinary Differential Equations / / by Shair Ahmad, Antonio Ambrosetti |
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| Soggetti | Differential equations<br>Numerical analysis<br>Applied mathematics<br>Engineering mathematics<br>Ordinary Differential Equations<br>Numerical Analysis<br>Applications of Mathematics |
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| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | 1 First order linear differential equations -- 2 Theory of first order differential equations -- 3 First order nonlinear differential equations -- 4 Existence and uniqueness for systems and higher order equations -- 5 Second order equations -- 6 Higher order linear equations -- 7 Systems of first order equations -- 8 Qualitative analysis of 2x2 systems and nonlinear second order equations -- 9 Sturm Liouville eigenvalue theory -- 10 Solutions by infinite series and Bessel functions -- 11 Laplace transform -- 12 Stability theory -- 13 Boundary value problems -- 14 Appendix A. Numerical methods -- 15 Answers to selected exercises. |
| Sommario/riassunto | This book offers readers a primer on the theory and applications of Ordinary Differential Equations. The style used is simple, yet thorough and rigorous. Each chapter ends with a broad set of exercises that range from the routine to the more challenging and thought-provoking. Solutions to selected exercises can be found at the end of the book. The book contains many interesting examples on topics such |

as electric circuits, the pendulum equation, the logistic equation, the Lotka-Volterra system, the Laplace Transform, etc., which introduce students to a number of interesting aspects of the theory and applications. The work is mainly intended for students of Mathematics, Physics, Engineering, Computer Science and other areas of the natural and social sciences that use ordinary differential equations, and who have a firm grasp of Calculus and a minimal understanding of the basic concepts used in Linear Algebra. It also studies a few more advanced topics, such as Stability Theory and Boundary Value Problems, which may be suitable for more advanced undergraduate or first-year graduate students. The second edition has been revised to correct minor errata, and features a number of carefully selected new exercises, together with more detailed explanations of some of the topics.