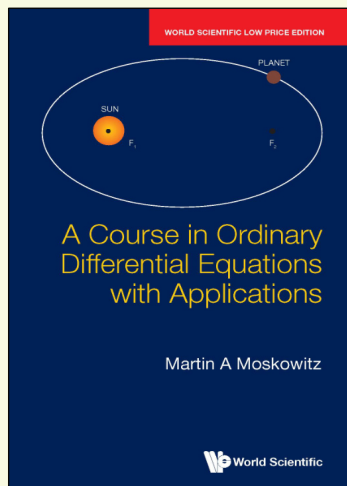


A Course in Ordinary Differential Equations with Applications



By **Martin A Moskowitz**
(City University of New York, USA)

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ABOUT THE BOOK

This book was written for advanced undergraduate math or science majors. Its initial purpose was to illustrate the elementary mathematical theory of ordinary differential equations and their diverse and powerful applications. Historically these have been decisive in many physical problems, some of which have philosophically challenged and indeed altered our civilization's concepts. Because of the importance of the subject, the book is also suitable for a one-semester course for graduate students. The book consists of 12 chapters and six appendices.

READERSHIP

Advanced undergraduate math or science majors, researchers.

CONTENTS

- An Introduction to First-Order Ordinary Differential Equations
- Planetary Motion
- Second-Order Ordinary Differential Equations
- Some More Advanced Topics in ODEs
- Approximation of Solutions
- Minding's Theorem, Sturm's Comparison Theorem and Other Results Concerning the Application of ODE to the Differential Geometry of Surfaces
- 2×2 Linear Systems
- Autonomous Dynamical Systems and the Poincare–Bendixson Theorem
- Matrix Differential Equations and the Matrix Exponential Function
- Classical Partial Differential Equations of the Second Order
- An Introduction to the Calculus of Variations

- The Gauss Bonnet Theorem for Surfaces in $\mathbb{R}^3$
- **Appendices:**
 - The Gaussian Distribution
 - Contraction Mappings and Picard's Existence Theorem
 - Stokes' Theorem
 - Real Analytic Functions
 - Fourier Series
 - Special Relativity

ABOUT THE AUTHOR

Martin A Moskowitz received his PhD from the University of California, Berkeley, in 1964 under the direction of Professor Gerhard P Hochschild. He was an Instructor in the Department of Mathematics at the University of Chicago from 1964 to 1966, and an Assistant Professor at Columbia University from 1966 to 1969. He then became an Associate Professor at the CUNY Graduate Center, becoming a Professor in 1975 and he spent the rest of his career (except for visiting appointments at the University of Rome-La Sapienza, University of Rome II, University of Darmstadt, University of California-Berkeley, and SUNY Stony Brook) at the CUNY Graduate Center, retiring in 2006.

Salient Academic Achievements: When invited to give a series of lectures at the University of Paris in 1976 the Author was awarded a National Science Foundation Senior Fellowship. Author was an editor of the *Journal of Lie Theory* for over 20 years and has authored or co-authored six mathematics books with World Scientific Press, and has published to date 55 research papers, all in refereed journals.

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KOLKATA

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