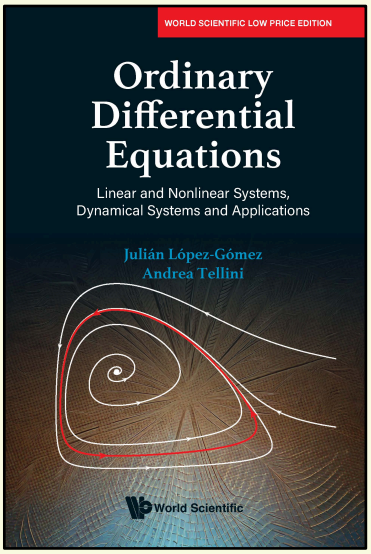
Ordinary Differential Equations

Linear and Nonlinear Systems, Dynamical Systems and Applications



By **Julián López-Gómez**
(Universidad Complutense de Madrid, Spain)
Andrea Tellini
(Universidad Politécnica de Madrid, Spain)

ISBN	9798886131703
Extent	752pp
Binding	Paperback
Year	2026
Price	Rs. 2695

ABOUT THE BOOK

The theory of ordinary differential equations is addressed in detail in this textbook, and is split into three sections: linear equations and systems, the general theory of nonlinear systems, and the theory of dynamical systems. These topics can be taken together or studied independently.

In addition to standard materials on the theory of ordinary differential equations, this textbook specialises in covering non-standard materials related to this theory including the theory of linear equation and systems with holomorphic coefficients; Kneser's theorem on the complexity of the set of solutions in the absence of uniqueness; the method of sub- and supersolutions for cooperative systems; and a detailed construction of the global bifurcation diagrams for some parametric classes of one-dimensional boundary value problems, which are pivotal for applications of the theory.

This is a self-contained, rigorous treatment of ordinary differential equations that is complemented by a variety of illustrating examples of the theory in practice. Many of these examples are related to models in Physics and Applied Sciences, making them suitable for students in Physics, Chemistry, Engineering, Mathematical Biology, Economics and Ecology as well as in Mathematics. Each chapter contains exercises to test students' understanding of the topic and concludes with some historical notes and further discussions.

READERSHIP

This book is targeted at undergraduate and graduate students in Mathematics, and professors in this subject. It would also be suitable for undergraduate and graduate students and professors in Physics, Chemistry, Engineering, Mathematical Biology, Economics and Ecology.

CONTENTS

ABOUT THE AUTHORS

Julián López-Gómez is an advisor of 15 PhD theses, author of around 220 research papers, most published in leading journals, and 10 books, and editor of a further five, among them the Proceedings of the 10th AIMS Conference (Madrid 2014, the largest conference on Differential Equations ever held, with over 2,300 participants). He has delivered invited talks at 88 conferences, co-organized 33 international scientific events, served as member of the editorial boards of *Advanced Nonlinear Studies, Nonlinear Analysis, RIMUT of Trieste, Abstract and Applied Analysis, Journal of Applied Mathematics, Mathematics, and Discrete and Continuous Dynamical Systems*, and has elaborated reports for over 80 international institutions and scientific interdisciplinary journals. His research interests encompass a large variety of fields including PDEs, ODEs, Numerical Analysis, Nonlinear Analysis, Operator Theory, Complex Analysis, Topology, Geometry, as well as a number of applications in Chemistry, Physics, Engineering and Population Dynamics.

Andrea Tellini is a Ramón y Cajal Research Fellow at Polytechnic University of Madrid, where he also teaches a course on Ordinary Differential Equations I in the Bachelor Degree in Mathematics. After completing his Bachelor and Master's studies at the University of Udine (Italy) as a student of the Scuola Superiore of the same university, he obtained his PhD at Complutense University of Madrid in 2013, under the supervision of Julián López-Gómez and Marcela Molina-Meyer. Following this, he occupied post-doc positions in Paris at the Centre d'Analyse et de Mathématique Sociales (France), under the supervision of Henri Berestycki, and at Autónoma University of Madrid, under the supervision of Carlos Mora-Corral, before obtaining a position at Polytechnic University of Madrid, where he has been working since 2018.

For orders and enquiries, please contact us:

FEEL Books

FEELBOOKS PVT. LTD.

DELHI	**4381/4 Ansari Road, Daryaganj, New Delhi 110002**		**Tel: +91-11-47472630**
	Pushpendra Kumar	**Mobile: +91 9015043442**	**Email: orders@feelbooks.in**
BENGALURU	**C-22, Brigade MM, KR Road, Jayanagar 7th Block, Bengaluru 560070**		**Tel: +91-80-26762129**
	Shekar Reddy	**Mobile: +91 9945234476**	**Email: bangalore@feelbooks.in**
MUMBAI	**Vijay Kumar**	**Mobile: +91 9871176434**	**Email: vkumar@feelbooks.in**
CHENNAI	**G Srinivasan**	**Mobile: +91 9003047502**	**Email: gsrinivasan@feelbooks.in**
KOLKATA	**Dhrubajyoti Bhattacharjee**	**Mobile: +91 9836160013**	**Email: dbhattacharjee@feelbooks.in**
HYDERABAD	**K.S.Vishwanath**	**Mobile: +91 9871745850**	**Email: kvishwanath@feelbooks.in**

***For Catalogues & title lists*: marketing@feelbooks.in**

FOLLOW US ON LinkedIn

www.feelbooks.in

FOLLOW US ON facebook