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Titolo	Ordinary Differential Equations [[electronic resource]] : Analysis, Qualitative Theory and Control / / by Hartmut Logemann, Eugene P. Ryan
Pubbl/distr/stampa	London : , : Springer London : , : Imprint : Springer, , 2014
ISBN	1-4471-6398-2
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (XIII, 333 p. 40 illus.) : online resource
Collana	Springer Undergraduate Mathematics Series, , 1615-2085
Disciplina	515/.35
Soggetti	Differential equations System theory Vibration Dynamical systems Dynamics Ordinary Differential Equations Systems Theory, Control Vibration, Dynamical Systems, Control
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references (pages 327-328) and index.
Nota di contenuto	Introduction -- Linear differential equations -- Introduction to linear control theory -- Nonlinear differential equations -- Stability and asymptotic behaviour -- Stability of feedback systems and stabilization.
Sommario/riassunto	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 the 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 postgraduates in mathematics and in mathematically oriented engineering and science.
