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Titolo	Linear Algebra [[electronic resource] /] / by Jörg Liesen, Volker Mehrmann
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2015
ISBN	3-319-24346-2
Edizione	[1st ed. 2015.]
Descrizione fisica	1 online resource (XI, 324 p. 22 illus.)
Collana	Springer Undergraduate Mathematics Series, , 1615-2085
Disciplina	512.5
Soggetti	Matrix theory Algebra Linear and Multilinear Algebras, Matrix Theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di contenuto	Linear Algebra in every day life -- Basic mathematical concepts -- Algebraic structures -- Matrices -- The echelon form and the rank of matrices -- Linear systems of equations -- Determinants of matrices -- The characteristic polynomial and eigenvalues of matrices -- Vector spaces -- Linear maps -- Linear forms and bilinear forms -- Euclidean and unitary vector spaces -- Adjoints of linear maps -- Eigenvalues of endomorphisms -- Polynomials and the Fundamental Theorem of Algebra -- Cyclic subspaces, duality and the Jordan canonical form -- Matrix functions and systems of differential equations -- Special classes of endomorphisms -- The singular value decomposition -- The Kronecker product and linear matrix equations.
Sommario/riassunto	This self-contained textbook takes a matrix-oriented approach to linear algebra and presents a complete theory, including all details and proofs, culminating in the Jordan canonical form and its proof. Throughout the development, the applicability of the results is highlighted. Additionally, the book presents special topics from applied linear algebra including matrix functions, the singular value decomposition, the Kronecker product and linear matrix equations. The matrix-oriented approach to linear algebra leads to a better intuition and a deeper understanding of the abstract concepts, and therefore simplifies their use in real world applications. Some of these

applications are presented in detailed examples. In several ‘MATLAB-Minutes’ students can comprehend the concepts and results using computational experiments. Necessary basics for the use of MATLAB are presented in a short introduction. Students can also actively work with the material and practice their mathematical skills in more than 300 exercises.