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	ISBN	3-031-08226-5
	Edizione	[1st ed. 2023.]
	Descrizione fisica	1 online resource (824 pages)
	Disciplina	620.001518
	Soggetti	Engineering mathematics
		Mechanics, Applied
		Engineering—Data processing
		Solids
		Mechanical engineering
		Engineering Mathematics
		Engineering Mechanics
		Mathematical and Computational Engineering Applications
		Solid Mechanics
		Mechanical Engineering
		Matemàtica per a enginyers
		Processament de dades
		Llibres electrònics
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	Introduction -- Solution of linear equations -- Computation of eigenvalues -- Solution of algebraic equations -- Interpolation.
	Sommario/riassunto	The book is designed to serve as a textbook for courses offered to graduate and upper-undergraduate students enrolled in mechanical engineering. The book attempts to make students with mathematical backgrounds comfortable with numerical methods. The book also serves as a handy reference for practicing engineers who are interested in applications. The book is written in an easy-to-understand manner, with the essence of each numerical method clearly stated. This makes it

easy for professional engineers, students, and early career researchers to follow the material presented in the book. The structure of the book has been modeled accordingly. It is divided into four modules: i) solution of a system of equations and eigenvalues which includes linear equations, determining eigenvalues, and solution of nonlinear equations; ii) function approximations: interpolation, data fit, numerical differentiation, and numerical integration; iii) solution of ordinary differential equations—initial value problems and boundary value problems; and iv) solution of partial differential equations—parabolic, elliptic, and hyperbolic PDEs. Each section of the book includes exercises to reinforce the concepts, and problems have been added at the end of each chapter. Exercise problems may be solved by using computational tools such as scientific calculators, spreadsheet programs, and MATLAB codes. The detailed coverage and pedagogical tools make this an ideal textbook for students, early career researchers, and professionals.