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	Nota di contenuto	Chapter 1. Solving Single Variable Equations -- Chapter 2. Solving Systems of Equations -- Chapter 3. Approximation -- Chapter 4. Optimization -- Chapter 5. Ordinary Dierential Equations -- Chapter 6. Stochastic Methods & Simulation -- Chapter 7. Computing Considerations -- Chapter 8. Modeling with Matrices -- Chapter 9. Modeling with Ordinary Dierential Equations -- Chapter 10. Modeling with Delayed Dierential Equations -- Chapter 11. Partial Dierential Equations -- Chapter 12. Modeling with Optimization and Simulation -- Chapter 13. Regression Modeling -- Appendix A.
	Sommario/riassunto	This textbook provides an introduction to the growing interdisciplinary field of computational science. It combines a foundational development of numerical methods with a variety of illustrative applications spread across numerous areas of science and engineering. The intended audience is the undergraduate who has completed introductory

coursework in mathematics and computer science. Students gain computational acuity by authoring their own numerical routines and by practicing with numerical methods as they solve computational models. This education encourages students to learn the importance of answering: How expensive is a calculation, how trustworthy is a calculation, and how might we model a problem to apply a desired numerical method? The text is written in two parts. Part I provides a succinct, one-term inauguration into the primary routines on which a further study of computational science rests. The material is organized so that the transition to computational science from coursework in calculus, differential equations, and linear algebra is natural. Beyond the mathematical and computational content of Part I, students gain proficiency with elemental programming constructs and visualization, which are presented in MATLAB syntax. The focus of Part II is modeling, wherein students build computational models, compute solutions, and report their findings. The models purposely intersect numerous areas of science and engineering to demonstrate the pervasive role played by computational science.