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	Titolo	A Primer on Scientific Programming with Python / / by Hans Petter Langtangen
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	Descrizione fisica	1 online resource (XXXI, 872 p. 170 illus., 70 illus. in color.)
	Collana	Texts in Computational Science and Engineering, , 1611-0994 ; ; 6
	Disciplina	005.133
	Soggetti	Computer science - Mathematics
		Computer programming
		Software engineering
		Computer science—Mathematics
		Physics
		Computational Science and Engineering
		Programming Techniques
		Software Engineering/Programming and Operating Systems
		Mathematics of Computing
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	Nota di bibliografia	Includes bibliographical references and index.
	Nota di contenuto	Preface -- Computing with Formulas -- Loops and Lists -- Functions and Branching -- User Input and Error Handling -- Array Computing and Curve Plotting -- Dictionaries and Strings -- Introduction to Classes -- Random Numbers and Simple Games -- Object-Oriented Programming -- Sequences and Difference Equations -- Introduction to Discrete Calculus -- Introduction to Differential Equations -- A Complete Differential Equation Project -- Programming of Differential Equations -- Debugging -- Migrating Python to Compiled Code -- Technical Topics -- Bibliography -- Index.
	Sommario/riassunto	The book serves as a first introduction to computer programming of scientific applications, using the high-level Python language. The exposition is example and problem-oriented, where the applications

are taken from mathematics, numerical calculus, statistics, physics, biology and finance. The book teaches "Matlab-style" and procedural programming as well as object-oriented programming. High school mathematics is a required background and it is advantageous to study classical and numerical one-variable calculus in parallel with reading this book. Besides learning how to program computers, the reader will also learn how to solve mathematical problems, arising in various branches of science and engineering, with the aid of numerical methods and programming. By blending programming, mathematics and scientific applications, the book lays a solid foundation for practicing computational science. From the reviews: Langtangen … does an excellent job of introducing programming as a set of skills in problem solving. He guides the reader into thinking properly about producing program logic and data structures for modeling real-world problems using objects and functions and embracing the object-oriented paradigm. … Summing Up: Highly recommended. F. H. Wild III, Choice, Vol. 47 (8), April 2010 Those of us who have learned scientific programming in Python 'on the streets' could be a little jealous of students who have the opportunity to take a course out of Langtangen's Primer." John D. Cook, The Mathematical Association of America, September 2011 This book goes through Python in particular, and programming in general, via tasks that scientists will likely perform. It contains valuable information for students new to scientific computing and would be the perfect bridge between an introduction to programming and an advanced course on numerical methods or computational science. Alex Small, IEEE, CiSE Vol. 14 (2), March/April 2012 .