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## Pyomo – Optimization Modeling in Python (Springer Optimization and Its Applications)

*By William E. Hart, Carl Laird, Jean-Paul Watson, David L. Woodruff*



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## **Editorial Review**

### Review

Documents a simple, yet versatile tool for modeling and solving optimization problems. ... The book, by Bill Hart, Carl Laird, Jean-Paul Watson, and David Woodruff, is essential to the usability of Pyomo, serving as the Pyomo documentation. ... has contents for both an inexperienced user, and a computational operations research expert. ... with examples of each of the concepts discussed.

Nedialko B. Dimitrov, **INFORMS Journal on Computing**, Vol. 24 (4), Fall 2012

### From the Back Cover

This book provides a complete and comprehensive guide to Pyomo (Python Optimization Modeling Objects) for beginning and advanced modelers, including students at the undergraduate and graduate levels, academic researchers, and practitioners. Modeling is a fundamental process in many aspects of scientific research, engineering, and business. This text beautifully illustrates the breadth of the modeling capabilities that are supported by this new software and its handling of complex real-world applications.

Pyomo is an open source software package for formulating and solving large-scale optimization problems. The software extends the modeling approach supported by modern AML (Algebraic Modeling Language) tools. Pyomo is a flexible, extensible, and portable AML that is embedded in Python, a full-featured scripting language. Python is a powerful and dynamic programming language that has a very clear, readable syntax and intuitive object orientation. Pyomo includes Python classes for defining sparse sets, parameters, and variables, which can be used to formulate algebraic expressions that define objectives and constraints. Moreover, Pyomo can be used from a command-line interface and within Python's interactive command environment, which makes it easy to create Pyomo models, apply a variety of optimizers, and examine solutions.

The text begins with a tutorial on simple linear and integer programming models. Information needed to install and get started with the software is also provided. A detailed reference of Pyomo's modeling components is illustrated with extensive examples, including a discussion of how to load data from sources like spreadsheets and databases. The final chapters cover advanced topics such as nonlinear models, stochastic models, and scripting examples.

### About the Author

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