



# Computational Methods for Fluid Flow (Scientific Computation)

*By Roger Peyret, Thomas D. Taylor*

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In developing this book, we decided to emphasize applications and to provide methods for solving problems. As a result, we limited the mathematical developments and we tried as far as possible to get insight into the behavior of numerical methods by considering simple mathematical models. The text contains three sections. The first is intended to give the fundamentals of most types of numerical approaches employed to solve fluid-mechanics problems. The topics of finite differences, finite elements, and spectral methods are included, as well as a number of special techniques. The second section is devoted to the solution of incompressible flows by the various numerical approaches. We have included solutions of laminar and turbulent-flow problems using finite difference, finite element, and spectral methods. The third section of the book is concerned with compressible flows. We divided this last section into inviscid and viscous flows and attempted to outline the methods for each area and give examples.

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**Bibliography**

- Rank: #13799895 in Books
- Published on: 1990-09-14
- Original language: English
- Number of items: 1
- Dimensions: .0" h x .0" w x .0" l, .0 pounds
- Binding: Paperback
- 358 pages

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