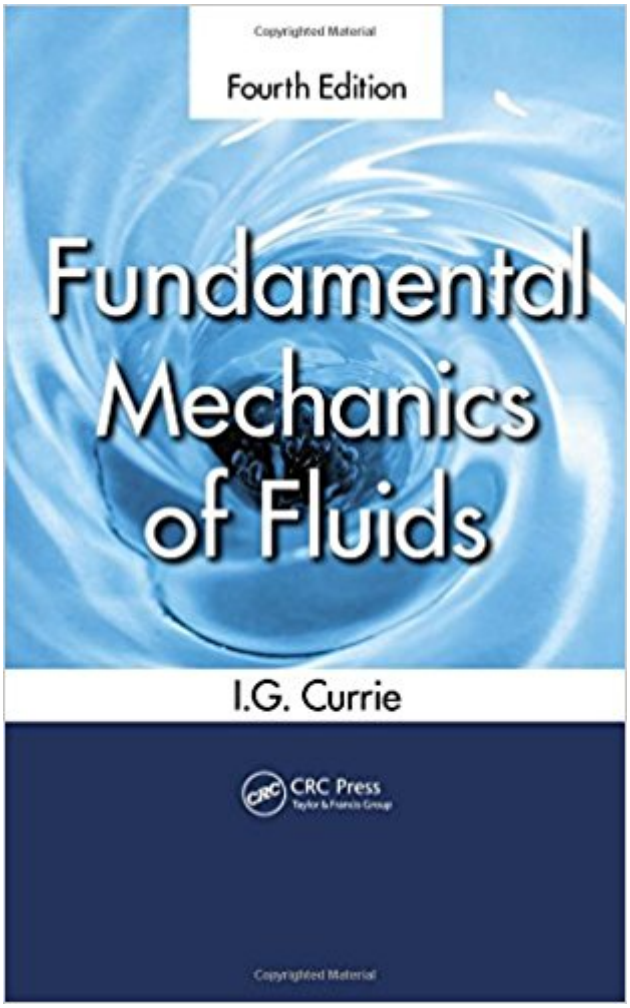
Fundamental Mechanics Of Fluids, Fourth Edition



Synopsis

Fundamental Mechanics of Fluids, Fourth Edition addresses the need for an introductory text that focuses on the basics of fluid mechanicsâ •before concentrating on specialized areas such as ideal-fluid flow and boundary-layer theory. Filling that void for both students and professionals working in different branches of engineering, this versatile instructional resource comprises five flexible, self-contained sections: Governing Equations deals with the derivation of the basic conservation laws, flow kinematics, and some basic theorems of fluid mechanics. Ideal-Fluid Flow covers two- and three-dimensional potential flows and surface waves. Viscous Flows of Incompressible Fluids discusses exact solutions, low-Reynolds-number approximations, boundary-layer theory, and buoyancy-driven flows. Compressible Flow of Inviscid Fluids addresses shockwaves as well as one- and multidimensional flows. Methods of Mathematical Analysis summarizes some commonly used analysis techniques. Additional appendices offer a synopsis of vectors, tensors, Fourier series, thermodynamics, and the governing equations in the common coordinate systems. The book identifies the phenomena associated with the various properties of compressible, viscous fluids in unsteady, three-dimensional flow situations. It provides techniques for solving specific types of fluid-flow problems, and it covers the derivation of the basic equations governing the laminar flow of Newtonian fluids, first assessing general situations and then shifting focus to more specific scenarios. The author illustrates the process of finding solutions to the governing equations. In the process, he reveals both the mathematical methodology and physical phenomena involved in each category of flow situation, which include ideal, viscous, and compressible fluids. This categorization enables a clear explanation of the different solution methods and the basis for the various physical consequences of fluid properties and flow characteristics. Armed with this new understanding, readers can then apply the appropriate equation results to deal with the particular circumstances of their own work.

Book Information

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Customer Reviews

"There are many graduate-level books in fluid mechanics. Currieâ ™s book is unique in that it covers more topics than usual but the coverage is sufficiently concise to keep the book from becoming a giant one. In doing so, the students are not lost in the details and are kept engaged."â •Mohamed Gad-el-Hak, Virginia Commonwealth University, Richmond, USA "This book is very systematically and clearly presented. ... It is a well-structured book and it provides the fundamental knowledge and materials to be of interest to engineers and researchers."â •Yitung Chen, University of Nevada Las Vegas, USA "The selection and coverage of the topics are very appropriate for a first graduate course in fluid mechanics. The text maintains its tradition as a readable text by an interested reader demanding no elaborate supplements. It also contains an appropriate coverage of mathematical tools in its appendices, so making the text self-contained."â •Jay M. Khodadadi, Department of Mechanical Engineering, Auburn University, Alabama, USA "This book has a unique place among the existing fluid mechanics textbooks. Simplicity and an easy-to-follow approach, combined with a broad coverage of topics, are among the unique features of the book."â “â “Heat Transfer Engineering,Â 2014

Iain G. Currie is a Professor Emeritus in the Department of Mechanical and Industrial Engineering at University of Toronto, Canada. He holds a Bachelorâ ™s degree in Mechanical Engineering from the University of Strathclyde, a Masterâ ™s degree from the University of British Columbia, and Ph.D. from the California Institute of Technology. He has taught fluid mechanics at the undergraduate and graduate levels for many years. His research involves fluid structure interactions, and he has become involved in studying low Reynolds number flows of both Newtonian and non-Newtonian fluids.

Got my book with no issues. Correct book with all the correct material. However, the front and back of this soft cover had square cutouts, which then had tape of a similar color put over them. These cutouts were very obvious because the colored tape was not of the same shade. After a semester

of regular use, nothing rough, desk to backpack, the tape and clear plastic covering on the entire cover were peeling up. With that said, ask the pages stayed in. Great cheap book.

This is one of the worst textbooks I have had to buy for school. It has NO examples at all, and I'm having difficulty doing all of the homework problems. There is so solution manual, either. Good luck if you have to use it. I'd recommend looking for alternate literature.

Digital edition is defective with several equations missing key symbols making the digital book almost useless.

Very good graduate level book. Clearly explains and details all of the derivations.

Fast shipping. Item arrived as described.

Good

Everything is okay. The regret is that the book is broken.

Derivations are cut short. I would like to see more precision. However, I do like that it is somewhat of an easy read

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