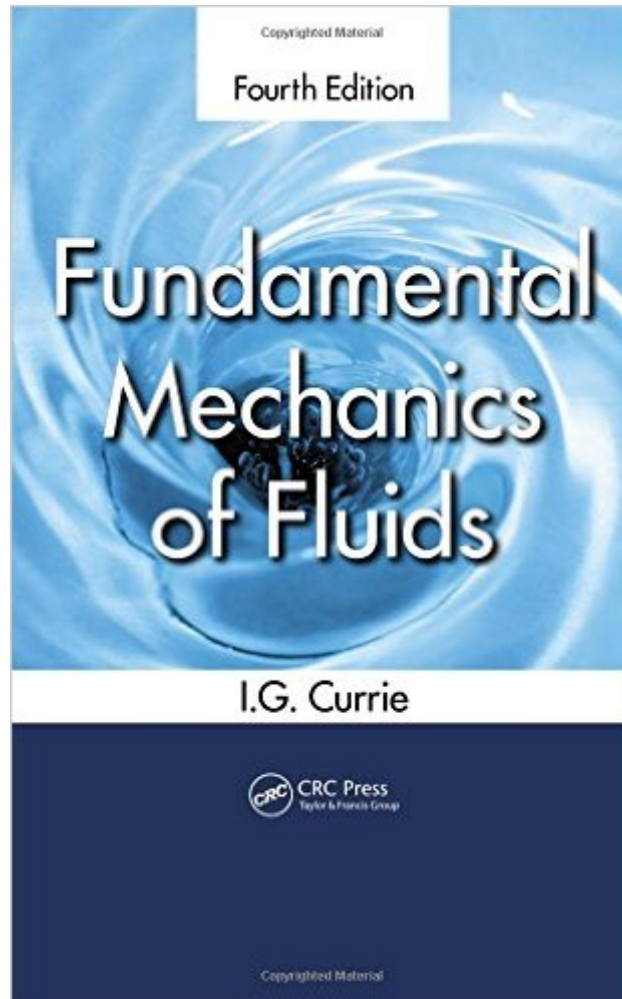


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# Fundamental Mechanics Of Fluids, Fourth Edition



## Synopsis

Fundamental Mechanics of Fluids, Fourth Edition addresses the need for an introductory text that focuses on the basics of fluid mechanics 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

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

A very introductory book for broad basic topics of fluid mechanics

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

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