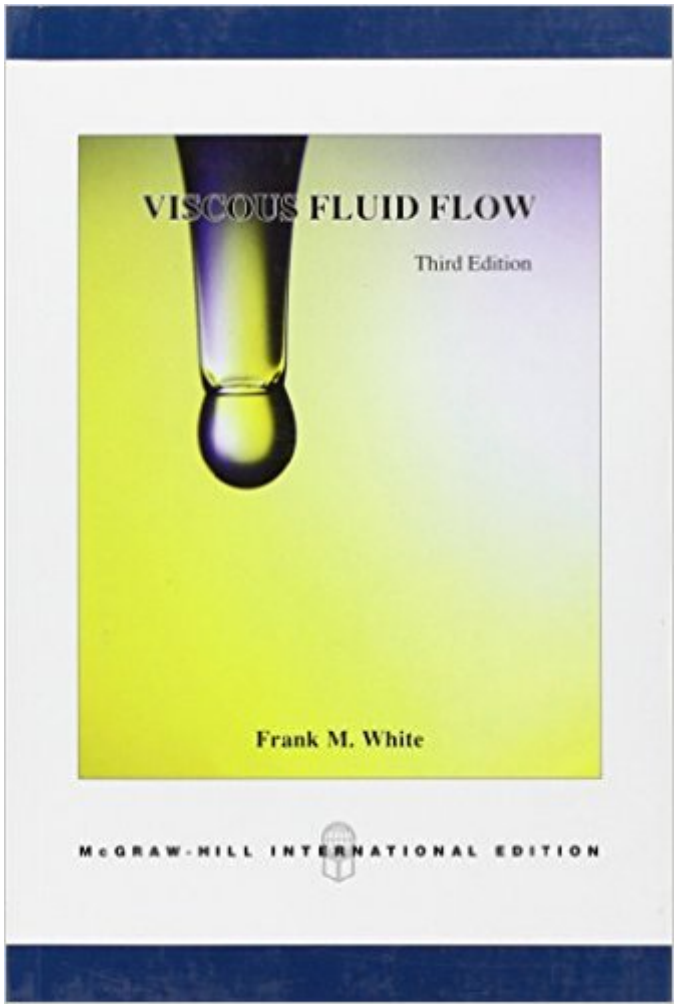
Viscous Fluid Flow (McGraw-Hill Mechanical Engineering)



Synopsis

Frank White’s "Viscous Fluid Flow, Third Edition", continues to be the market leader in this course area. The text is for a senior pr graduate level elective in Mechanical Engineering, and has a strong professional and international appeal. Author Frank White is has a strong reputation in the field, his book is accurate, conceptually strong, and contains excellent problem sets. A large number of the problems are new to this third edition; a rarity among senior and graduate level textbooks as advanced problems are difficult to create. The references found in the text have been updated and reflect the most current information available. Users will also be interested to find explanations of, and references to ongoing controversies and trends in this course area. Topically speaking, the text contains modern information on technological advances, such as Micro- and Nano-technology, Turbulence Modeling, Computational Fluid Dynamics (CFD), and Unsteady Boundary Layers.

Book Information

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Customer Reviews

"Viscous Fluid Flow" is quite thorough and well thought out. I won’t go so far as to say that it reads like a novel, but it flows quite nicely. This book is for senior undergraduate or first-year graduates. The topics contained within are quite advanced in comparison to typical undergraduate Fluid Mechanics. The only problem I had with this text is that at times (not often) the hierarchy of the topics would get jumbled. For example, the explanation for a topic might come before the topic was even introduced leading to some confusion. Regardless, this textbook is REQUIRED for the

bookshelf of any serious Fluid Dynamicist.

This book gives an excellent summary of viscous flow and is a valuable addition to any engineers bookshelf. A good knowledge of fluid mechanic fundamentals is essential to understand the material presented. This book is definitely not for a freshman. The author quickly covers the fundamental equations of fluid motion and then proceeds to discuss the viscous flow and boundary layer theory. Laminar boundary layers, transition, turbulent boundary layers and compressible boundary layers each receive a chapter. Each topic is reviewed and examples are given. The treatment is a little terse, which makes reading the book a tough job. Alot of excellent references are given and I would advise anybody serious about viscous flow to review this material as Whites treatment can be skimpy. The chapter on turbulent flow provides an excellent summary of useful empirical correlations and an introduction to the K-epsilon model. In summary, this is an excellent and reasonably comprehensive reference book(weak on boundary layers in rotating flows), but a poor book to learn from.

Review Source: Graduate Mechanical Engineer, BE Mech. Eng.Frank White did an excellent job with this book for my level of knowledge anyway. It provided exactly what I wanted: 1. Preliminary concepts section that overviews gives a fairly advanced thermodynamic look at fluid properties and models and boundary conditions. great at stating assumptions of models. 2. Derivation of navier stokes and energy equation along with introduction to non-dimensionalization and explains all the dimensionless numbers involved with viscous flow and heat transfer. 3. Very "follow-able" derivations of many solutions to navier-stokes equations, ie Couette, duct, suction, porous media flows, low Reynolds creep. 4. 100 page of approximate laminar boundary layer model derivations, mostly 2D with introduction to 3D BL’s. Still need Schlichting’s "Boundary Layer Theory". Would have liked to have more on seperation. 5. The rest of the text goes into the stability of boundary layers, incompressible and compressible turbulent flow, and compressible turbulent boundary layers. I have not gotten this far in the text yet but I’m sure it’s well written and technically sound after the reading the first half.Very well written book for people interested in learning yet expands to fairly technical areas.

As I see it, text books are meant to instruct the readers on the rules and such surrounding a specific subject. This book covers such a broad swath of topics that it is nearly impossible for the author to spend enough time on each individual topic. If you are looking for a reference book that has a good

set of condensed equations, tables, and figures, this is a good book for you. However, if you actually want to learn about viscous fluid flow, you should probably look at another book.

This text does cover viscous flow topics very thoroughly but sometimes a little difficult to follow. Very few examples, but a good text for an upper level class. Not for an intro to viscous fluid flows.

This book is extremely comprehensive and covers a large number of topics. My biggest complaint is that, while I believe it will ultimately serve as a useful reference material, it does not do much in the way of actually "teaching". The majority of the text is concerned with the derivation of different formulas but there are virtually no examples of those equations in action. In addition, I felt the chapter problems were not intuitive and in general did nothing to increase my overall understanding.

It is hard to tell how this book might be in a normal way, as I purchased from SouthAsiaBooks and received a copy that was invalid, i.e. for sale only in India, Sri Lanka, Pakistan... and not the American version as represented in the description. There are many grammatical errors that make it hard to comprehend the contents and the book itself is poorly constructed. Perhaps the correct version of the book is better, but be careful who you buy from.

White provides a well-written and clear outline of the equations and major topics important to understanding viscous fluid flow and the fundamentals of boundary layer theory. Especially considering that as of writing this review, paperback copies are available for under $20, this is a reference text that is definitely worth owning.

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