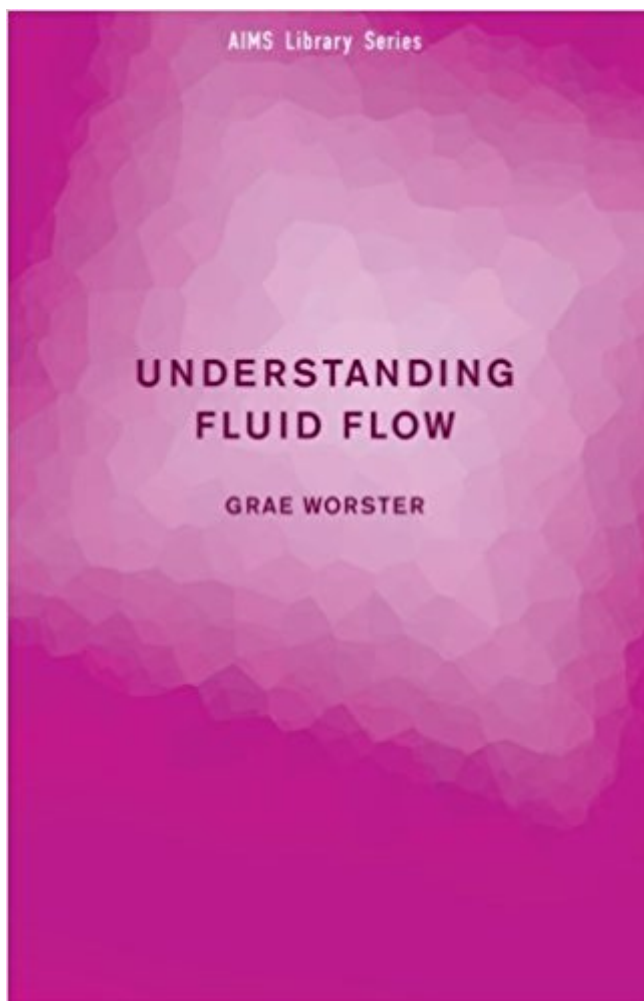


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Understanding Fluid Flow (AIMS Library Of Mathematical Sciences)



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Understanding Fluid Flow takes a fresh approach to introducing fluid dynamics, with physical reasoning and mathematical developments inextricably intertwined. The 'dry' fluid dynamics described by potential theory is set within the context of real viscous flows to give fundamental insight into how fluids behave. The book gives a flavor of theoretical, experimental and numerical approaches to analyzing fluid flow, and implicitly develops skills in applied mathematical modeling of physical systems. It is supplemented by movies that are freely downloadable.

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Understanding Fluid Flow takes a fresh approach to introducing fluid dynamics, with physical reasoning and mathematical developments inextricably intertwined. It gives a flavour of theoretical, experimental and numerical approaches to analysing fluid flow, and implicitly develops skills in applied mathematical modelling. It is supplemented by movies that are freely downloadable.

If new to the subject, use this book to get a taste of what studying fluid mechanics would be like, and as a start in gaining some literacy in the field. This book emphasizes physical intuition and reasoning, such as scaling arguments and dimensional analysis, rather than formal mathematics. It discusses concepts such as parallel shear flows, boundary layers, viscous gravity current, vorticity dynamics, potential flow, separation and D'Alembert's paradox, aerodynamic lift, surface waves, ship wakes, and the Kelvin-Helmholtz instability. Read this little book, along with the two chapters on fluids in the *The Feynman Lectures on Physics (3 Volume Set) (Set v)*, to get acquainted with the subject. Follow up with a more traditional textbook--there are many good ones eg, Kundu & Cohen's *Fluid Mechanics with Multimedia DVD, Fourth Edition*--for a more comprehensive basic education, and recent volumes of the *Annual Review of Fluid Mechanics* for a cross section of current research.

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