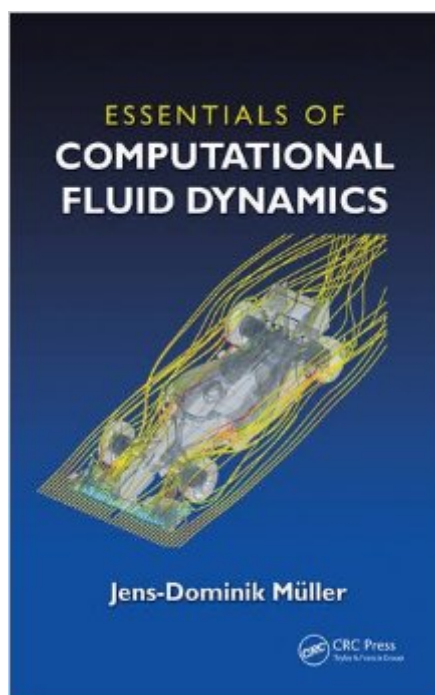


The book was found

# Essentials Of Computational Fluid Dynamics



## Synopsis

Covered from the vantage point of a user of a commercial flow package, *Essentials of Computational Fluid Dynamics* provides the information needed to competently operate a commercial flow solver. This book provides a physical description of fluid flow, outlines the strengths and weaknesses of computational fluid dynamics (CFD), presents the basics of the discretization of the equations, focuses on the understanding of how the flow physics interact with a typical finite-volume discretization, and highlights the approximate nature of CFD. It emphasizes how the physical concepts (mass conservation or momentum balance) are reflected in the CFD solutions while minimizing the required mathematical/numerical background. In addition, it uses case studies in mechanical/aero and biomedical engineering, includes MATLAB and spreadsheet examples, codes and exercise questions. The book also provides practical demonstrations on core principles and key behaviors and incorporates a wide range of colorful examples of CFD simulations in various fields of engineering. In addition, this author:

- Introduces basic discretizations, the linear advection equation, and forward, backward and central differences
- Proposes a prototype discretization (first-order upwind) implemented in a spreadsheet/MATLAB example that highlights the diffusive character
- Looks at consistency, truncation error, and order of accuracy
- Analyzes the truncation error of the forward, backward, central differences using simple Taylor analysis
- Demonstrates how the use of upwinding produces Artificial Viscosity (AV) and its importance for stability
- Explains how to select boundary conditions based on physical considerations
- Illustrates these concepts in a number of carefully discussed case studies

*Essentials of Computational Fluid Dynamics* provides a solid introduction to the basic principles of practical CFD and serves as a resource for students in mechanical or aerospace engineering taking a first CFD course as well as practicing professionals needing a brief, accessible introduction to CFD.

## Book Information

Paperback: 239 pages

Publisher: CRC Press; 2015 edition (November 6, 2015)

Language: English

ISBN-10: 1482227304

ISBN-13: 978-1482227307

Product Dimensions: 6.1 x 0.5 x 9.1 inches

Shipping Weight: 12.6 ounces (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #1,478,516 in Books (See Top 100 in Books) #416 in Books > Engineering & Transportation > Engineering > Mechanical > Hydraulics #2168 in Books > Textbooks > Engineering > Mechanical Engineering #2183 in Books > Engineering & Transportation > Engineering > Materials & Material Science

[Download to continue reading...](#)

Caillou, Toddler Essentials: 5 Books about Growing Dragon NaturallySpeaking: Dragon NaturallySpeaking Essentials, Dragon NaturallySpeaking Basics, Dragon NaturallySpeaking for Beginners, Dragon NaturallySpeaking ... Commands You Need to Know, Dragon Master Players Making Decisions: Game Design Essentials and the Art of Understanding Your Players Unreal Engine Lighting and Rendering Essentials Computational Complexity Cyber-Physical Systems: A Computational Perspective OpenStack Essentials VMware vRealize Orchestrator Essentials Hadoop 2 Quick-Start Guide: Learn the Essentials of Big Data Computing in the Apache Hadoop 2 Ecosystem (Addison-Wesley Data & Analytics) Hadoop 2 Quick-Start Guide: Learn the Essentials of Big Data Computing in the Apache Hadoop 2 Ecosystem (Addison-Wesley Data & Analytics Series) Apple Pro Training Series: OS X Support Essentials 10.10: Supporting and Troubleshooting OS X Yosemite Apple Pro Training Series: OS X Server Essentials 10.10: Using and Supporting OS X Server on Yosemite Android Studio Development Essentials: Android 6 Edition Kali Linux Wireless Penetration Testing Essentials Salt Essentials Linux Essentials Real-Time 3D Rendering with DirectX and HLSL (Book) and DirectX Essentials LiveLessons (Video Training) Bundle Learn C the Hard Way: Practical Exercises on the Computational Subjects You Keep Avoiding (Like C) (Zed Shaw's Hard Way Series) SWIFT: PROGRAMMING ESSENTIALS (Bonus Content Included): Learn iOS development! Code and design apps with Apple's New programming language TODAY (iOS development, swift programming) Microsoft Office 2016 Essentials Quick Reference Guide - Windows Version (Cheat Sheet of Instructions, Tips & Shortcuts - Laminated Card)

[Dmca](#)