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engineering Understanding aerodynamics and fluid flow around aircraft Chemical engineering Design of process equipment involving fluid flow and mixing 3 Medical engineering Design of medical devices and systems involving fluid handling The understanding of hydraulics provides a vital foundation for tackling complex problems in various engineering disciplines highlighting the importance of its study and application across diverse fields

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this book presents the theory and computation of open channel flows using detailed analytical numerical and experimental results the fundamental equations of open channel flows are derived by means of a rigorous vertical integration of the rans equations for turbulent flow in turn the hydrostatic pressure hypothesis which forms the core of many shallow water hydraulic models is scrutinized by analyzing its underlying assumptions the book s main focus is on one dimensional models including detailed treatments of unsteady and steady flows the use of modern shock capturing finite difference and finite volume methods is described in detail and the quality of solutions is carefully assessed on the basis of analytical and experimental results the book s unique features include rigorous derivation of the hydrostatic based shallow water hydraulic models detailed treatment of steady open channel flows including the computation of transcritical flow profiles general analysis of gate maneuvers as the solution of a riemann problem presents modern shock capturing finite volume methods for the computation of unsteady free surface flows introduces readers to movable bed and sediment transport in shallow water models includes numerical solutions of shallow water hydraulic models for non hydrostatic steady and unsteady free surface flows this book is suitable for both

undergraduate and graduate level students given that the theory and numerical methods are progressively introduced starting with the basics as supporting material a collection of source codes written in visual basic and inserted as macros in microsoft excel is available the theory is implemented step by step in the codes and the resulting programs are used throughout the book to produce the respective solutions

announcements for the following year included in some vols

the committee firenze 2016 on the occasion of the 50th anniversary of the tragic 1966 flood invited six engineers and scientists to form an international technical scientific committee itsc to assess the current status of flood protection for the city of florence and identify steps to reduce the risk of flooding facing the city in this final report itsc concludes that florence remains at risk to significant flooding and this risk grows each day it is not a question of whether a flood of the magnitude of 1966 or greater will occur but when in fact the level of protection that exists in florence now is not on a level appropriate to the citizens and treasures that rest within the city if under current conditions a 1966 like flood occurred the consequences to human lives treasures properties and community infrastructure could be much more catastrophic than they were in 1966

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