



METADATA

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Abstract

The listing of computer programs (source codes), together with the theory related to them, is intended to solve typical hydraulic engineering problems. This book is a continuation of the subject of Computational Fluid Dynamics (CFD). Previously and for many years the course of Computational Fluid Dynamics has been taught as an undergraduate course, but with some variations, also as a postgraduate course at the Department of Civil Engineering of the Democritus University of Thrace. Hydraulic Engineering deals with problems of incompressible Fluid Mechanics, the main representative of which is the flow of water. The material, of this basically educational textbook, is designed to meet the teaching needs of the semester course entitled "Calculation of Hydraulic Projects using computers", which since thirty years and more

has been delivered to the undergraduate students of this department. The solved examples and the simultaneous presentation of computer programs in the Fortran programming language are aimed at consolidating the subject of Computational Hydraulic Engineering. The detailed presentation of the open source codes (.f90) in the Fortran programming language (f77 and f90) is intended to enable further development to solve more complex problems that may be encountered later. The results are checked by analyzing both the input data (.dat) and typical results of the calculations (.out). The usefulness of the text is not limited to Computational Hydraulics. The universality of partial differential equations enables the present computational techniques to be applied to a wide range of problems in Continuous Media Mechanics.

