
## METADATA

**Title:** Experimental Hydraulics

**Other Titles:** Laboratory Reproduction and Analysis of Hydraulic Phenomena

**Language:** Greek

**Authors:** Valavanides, M., Professor, UNIWA

**ISBN:** 978-618-228-282-3

**Subject:** ENGINEERING AND TECHNOLOGY

**Keywords:** Hydraulics / Hydrostatics / Pressure driven incompressible flows / Free surface flows / Dimensional analysis

**Bibliographic Reference:** Valavanides, M. (2025). Experimental Hydraulics [Undergraduate textbook]. Kallipos, Open Academic Editions. http://dx.doi.org/10.57713/kallipos-1033

**Abstract**

This educational book aims to facilitate the study and understanding of fundamental hydraulic phenomena through observation and analysis under controlled laboratory conditions in the form of experiments. It is designed to support courses with the same or similar titles in undergraduate civil engineering programs. Primarily intended for undergraduate civil engineering students, the book serves as a supplementary resource to enhance their comprehension of basic hydraulic principles. The goal is to help students develop the ability to address hydraulic engineering challenges by integrating theoretical knowledge with empirical training. The learning objectives include: expanding the theoretical foundation of the reader, identifying and critically evaluating observed hydraulic phenomena in the field or within engineering projects, drawing well-reasoned conclusions about the behavior of hydraulic systems, addressing issues related to their use, optimization, or management. The book is structured into four main chapters and 21 subchapters. Chapter 1, Introductory Knowledge, covers fundamental concepts and methodologies for designing and conducting experiments, including general techniques such as dimensional analysis and curve fitting. The remaining three chapters focus on the laboratory-based reproduction of hydraulic phenomena, categorized as follows: Hydrostatics, Hydraulics of Closed Pipes (pressurized flow), Hydraulics of Open Channels (free-surface flow).

The Project is funded by the National Development Programme 2021-2025 of the Ministry of Education and Religious Affairs and implemented by the Special Account for Research Funds of the National Technical University of Athens and the Hellenic Academic Libraries Link.