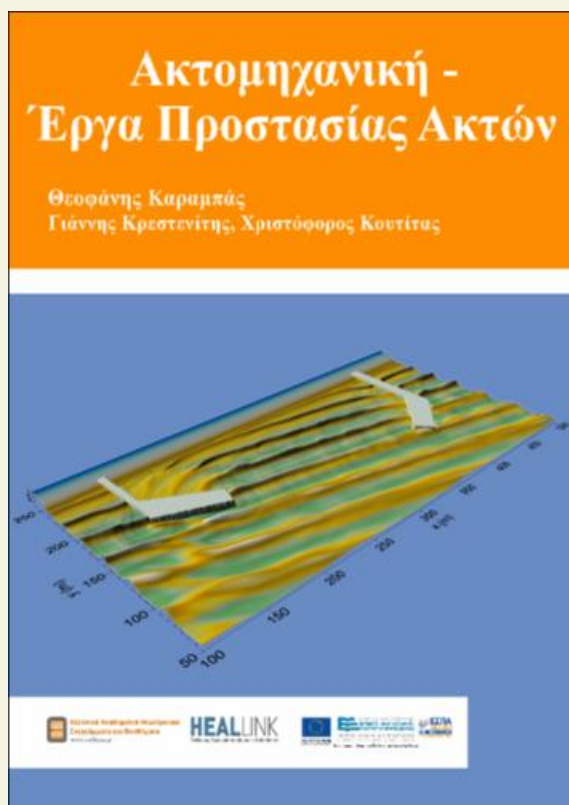




METADATA

Title: Coastal Engineering - Coastal Protection Structures

Other Titles: Sea Wave Mechanics - Coastal Morphodynamics - Coastal Protection Structures - Mathematical Models in Coastal Engineering

Language: Greek

ISBN: 978-960-603-378-0

Subject: ENGINEERING AND TECHNOLOGY

Keywords: Sea Wave Mechanics / Coastal Morphodynamics / Coastal Protection Structures / Mathematical Models In Coastal Engineering

Bibliographic Reference: Karampas, T., Krestenitis, I., & Koutitas, C. (2015). Coastal Engineering - Coastal Protection Structures [Undergraduate textbook]. Kallipos, Open Academic Editions. <http://dx.doi.org/10.57713/kallipos-801>

Abstract

Our country is surrounded by coasts with a total length of 15,000 km, a significant portion of which is utilized as a natural resource with economic and social benefits: transportation of goods/passengers through ports, disposal of waste, use of sandy beaches for recreation, etc. However, in recent years, the coastal zone has been under pressure from environmental factors, with the most significant issue being coastal erosion. This problem has intensified in recent years due to climate change, which also affects the operation of port and coastal engineering projects that now require redesign/upgrading. The main purpose of this textbook is to contribute to a deeper understanding of the natural processes of the coastal zone and to the proper design of coastal projects and shoreline protection works. The book is aimed at Civil Engineers/Scientists (students or professionals). Readers are introduced to the basic principles

of Coastal Engineering science. They gain a comprehensive understanding of, mainly wave-related, processes of the coastal environment, sediment transport phenomena, seabed morphology evolution, and the interaction of structures-wave processes. The individual chapters of the textbook cover wave theory, its transformation in the coastal zone, prediction, statistical study, coastal sediment transport and morphodynamics, the impacts of climate change on erosion and the design of coastal protection works. Each chapter includes examples and exercises. The textbook is accompanied by free software for educational and operational use. The software consists of simple applications of wave theory and its shaping in the coastal zone (prediction, diffraction, refraction, breaking, etc.) as well as two-dimensional mathematical models for designing port works, coastal morphodynamics, and shoreline protection works.

