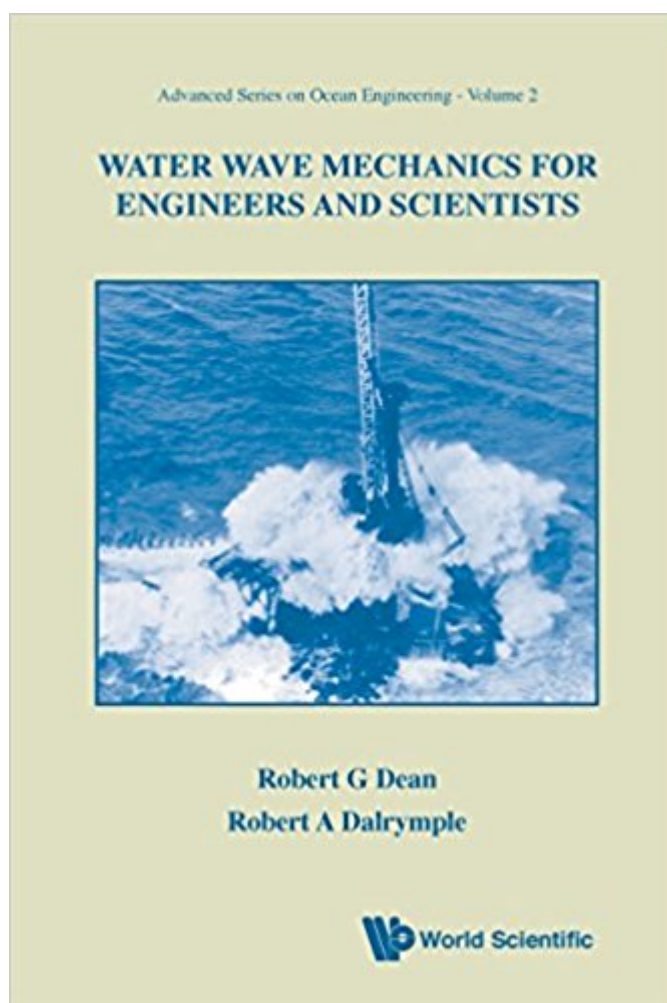


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Water Wave Mechanics For Engineers & Scientists (Advanced Series On Ocean Engineering-Vol2) (v. 2)



Synopsis

This book is intended as an introduction to classical water wave theory for the college senior or first year graduate student. The material is self-contained; almost all mathematical and engineering concepts are presented or derived in the text, thus making the book accessible to practicing engineers as well. The book commences with a review of fluid mechanics and basic vector concepts. The formulation and solution of the governing boundary value problem for small amplitude waves are developed and the kinematic and pressure fields for short and long waves are explored. The transformation of waves due to variations in depth and their interactions with structures are derived. Wavemaker theories and the statistics of ocean waves are reviewed. The application of the water particle motions and pressure fields are applied to the calculation of wave forces on small and large objects. Extension of the linear theory results to several nonlinear wave properties is presented. Each chapter concludes with a set of homework problems exercising and sometimes extending the material presented in the chapter. An appendix provides a description of nine experiments which can be performed, with little additional equipment, in most wave tank facilities.

Book Information

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Customer Reviews

"Chapter on wave maker theory is new material, generally not found in text books. The authors pull together good stuff from various widely scattered sources ... the book makes a good impression ... it is worth having a copy of this book on your desk." -- T S Murty, Marine Geodesy

When I was in college studying structural engineering, one of my professors told the class: "The trouble with you students is, you don't know what you don't know". This book is a perfect illustration that, I "didn't know what I didn't know" much about water waves. This subject is very interesting. I got into this subject because I was designing an ocean marine dock. This book serves as an excellent resource for learning the essential topics, theory and technical jargon of this interesting field. Be forewarned that you will need a good understanding of differential equations to understand this subject. Written by two experts in this field, Professors Dean and Dalrymple cover the fundamental physics and mathematics of water wave mechanics. The mathematical derivation of formulas is impressive. The authors have gone through extra effort to explain things clearly. The focus is on classical solutions, with little in the way of numerical solutions. An especially nice feature are the historical tributes to great mathematicians, scientists and engineers of the past who made significant contributions in this field.

I enjoy fluid mechanics texts. I also enjoy the ocean. Hence, I enjoy this book. It begins with an excellent review of the Navier-Stokes equations, then leads into potential flow and streamfunctions. It's not a completely thorough derivation, but it doesn't gloss over any concepts or use any handwavy tricks. The application problems and development of waves and wave theory are great. Highly recommended. (P.S. My MS and PhD are in Fluid Mechanics, but I teach math. This is kind of where I'm coming from.)

An absolute must for ocean engineers, specifically when dealing with waves and coastal structures. I am constantly going back to this book to use a reference for formulas and information.

Great value for the price but a few of the equations are very small and difficult to read in the Kindle version.

wonderful book for ocean engineering student.

comprehensible and readable. This is a good book if one want to dive into this world of water wave mechanics.

very good

Great

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