Theory and Applications of Ocean Surface Waves
(In 2 Volumes)
3rd Edition

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Reviews of the Previous Edition:
“Overall, the book remains a major resource for graduate students in ocean engineering and applied mathematics. The new material that has been added is certainly appropriate.”

Mathematical Reviews

“Much of the introductory material is well presented, and followed by many specific examples, often with full mathematical detail ... These books can certainly benefit graduate students and researchers, and Part 2 is a worthwhile improvement over the earlier editions.”

Journal of Fluid Mechanics

Description:
This book set is a revised version of the 2005 edition of Theory and Applications of Ocean Surface Waves. It presents theoretical topics on ocean wave dynamics, including basic principles and applications in coastal and offshore engineering as well as coastal oceanography. Advanced analytical and numerical techniques are demonstrated. In this revised version, five chapters on recent developments in linear and nonlinear aspects have been added. The first is on detailed analyses in Wave/Structure Interactions. The second is a new section on Waves through a Marine Forest, a topic motivated by its possible relevance to tsunami reduction. The third is on Long Waves in Shallow Water and the fourth is an update on Broad-Banded Nonlinear Surface Waves in the Open Sea to include new findings in this topic. The fifth is an expanded chapter on Numerical Simulation of Nonlinear Wave Dynamics to include predictions of nonlinear spectral evolution and rogue wave occurrence and dynamics using large-scale phase-resolved simulations. This revised version also includes recent developments in precorrected-FFT accelerated O(N log N) low- and high-order boundary element methods for the computation of fully nonlinear wave-wave and wave-body interactions.

Theory and Applications of Ocean Surface Waves (2016) will be invaluable for graduate students and researchers in coastal and ocean engineering, geophysical fluid dynamists interested in water waves, and theoretical scientists and applied mathematicians wishing to develop new techniques for challenging problems or to apply techniques existing elsewhere.