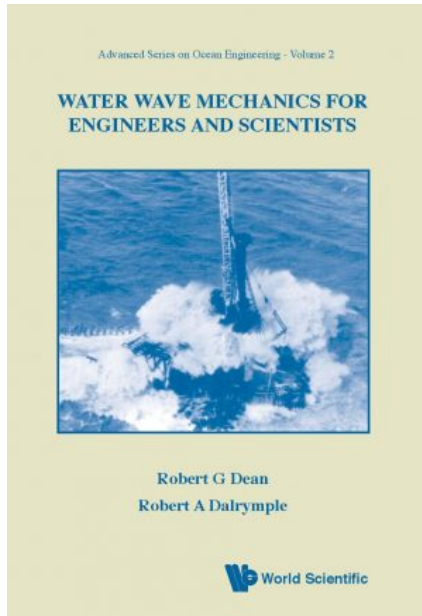


## Water Wave Mechanics for Engineers and Scientists



### About the Book

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.

**Author:** Robert G. Dean;  
Robert A. Dalrymple

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### About the Author

Robert G. Dean, University of Florida, USA

Robert A. Dalrymple, University of Delaware, USA

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**STAY CONNECTED**

Second Floor, Prakashdeep 22, Delhi Medical  
Association Road, Darya Ganj, New Delhi – 110 002

**Phone No :** [+91-11-4357-2647](tel:+91-11-4357-2647)

**Email ID :** [info@devbooks.co.in](mailto:info@devbooks.co.in)

**Website :** [devbooks.co.in](http://devbooks.co.in)