Introduction To Coastal Engineering And Management

Random waves are the most important constituent of the sea environment. They make the design of maritime structures quite different from that of structures on land. In this book, the concept of randomness in waves for the design of breakwaters, seawalls, and harbor structures is fully explored for easy comprehension by practicing engineers. Theoretical aspects are also discussed in detail for further studies by graduate students and researchers. Several additions have been made to this second edition, including a new chapter on extreme wave statistics.

Effective coastal engineering is expensive, but it is not as costly as neglect or ineffective intervention. Good practice needs to be based on sound principles, but theoretical work and modelling also need to be well grounded in practice, which is continuously evolving. Conceptual and detailed design has been advanced by new industry publications since the publication of the second edition. This third edition provides a number of updates: the sections on wave overtopping have been updated to reflect changes brought in with the recently issued EurOtop II manual; a detailed worked example is given of the calculation of extreme wave conditions for design; additional examples have been included on the reliability of structures and probabilistic design; the method for tidal analysis and calculation of amplitudes and phases of harmonic constituents from water level time series has been introduced in a new appendix together with a worked example of harmonic analysis; and a real-life example is included of a design adapting to climate change. This book is especially useful as an information source for undergraduates and engineering MSc students specializing in coastal engineering and management. Readers require a good grounding in basic fluid mechanics or engineering hydraulics, and some familiarity with elementary statistical concepts.

Glossary of technical engineering terminology for professional engineers and planners interested in coastal engineering.

This book treats the subject of sediment transport in the marine environment, covering transport of non-cohesive sediment by waves and current in- and outside the surf zone. It can be read independently, but a background in hydraulics and basic wave mechanics is required. It is intended for M.Sc. and Ph.D. students. The primary aim of the book is to describe the physical processes of sediment transport and how to represent them in mathematical models. It does not present a large number of different formulae for the sediment transport rates under various conditions. The book can be divided in two main parts; in the first, the relevant hydrodynamic theory is described; in the second, sediment transport and morphological development are treated. The hydrodynamic part contains a review of elementary theory for water waves, chapters on the turbulent wave boundary layer and the turbulent interaction between waves and currents, and finally, surf zone hydrodynamics and wave driven currents. The part on sediment transport introduces the basic concepts (critical bed shear stress, bed load, suspended load and sheet layer, near-bed concentration, effect of sloping bed); it treats suspended sediment in waves and current and in the surf zone, and current and wave-generated bed forms. Finally, the modelling of cross-shore and long-shore sediment transport is described together with the development, of coastal profiles and coastlines.

Springer Handbook of Ocean Engineering

Proceedings of an International Conference, Newark, Delaware, August 1981

Processes, Theory and Design Practice

Physical Modelling in Coastal Engineering

Mechanistic models are often employed to simulate processes in coastal environments. However, these predictive tools are highly specialized, involve certain assumptions and limitations, and can be manipulated only by experienced engineers who have a thorough understanding of the underlying principles. This results in significant constraints on their manipulation as well as large gaps in understanding and expectations between the developers and users of a model. Recent advancements in soft computing technologies make it possible to integrate machine learning capabilities into numerical modelling systems in order to bridge the gaps and lessen the demands on human experts. This book reviews the state-of-the-art in conventional coastal modelling as well as in the increasingly popular integration of various artificial intelligence technologies into coastal modelling. Conventional hydrodynamic and water quality modelling techniques comprise finite difference and finite element methods. The novel algorithms and methods include knowledge-based systems, genetic algorithms, artificial neural networks, and fuzzy inference systems. Different soft computing methods contribute towards accurate and reliable prediction of coastal processes. Combining these techniques and harnessing their benefits has the potential to make extremely powerful modelling tools.

The world’s population is expected to increase to over 8 billion by 2020. About 60% of the total population of the world lives in coastal areas and 65% of the cities with a population of over 2.5 million are located in coastal areas. Written by an international panel of experts in the fields of engineering and risk management, The Handbook of Coastal Disasters Mitigation presents a coherent overview of 10 years of coastal disaster risk management and engineering, during which some of the most relevant events of recent time have taken place, including the Indian Ocean tsunami, hurricanes Katrina and Sandy in the United States or the 2011 Japanese tsunami. International case studies offer practical lessons on how disaster resilience can be improved in the future Contains tools and techniques for analyzing and managing the risk of coastal disasters Provides engineering measures for mitigating coastal vulnerability to tsunamis, tropical cyclones, and hurricanes Includes crucial tactics for rehabilitation and reconstruction of the infrastructure

This book is intended to be a text for undergraduate students of coastal engineering. It also serves as a reference for graduate students and practicing engineers, building on a basic foundation in coastal engineering. Finally, it is a guide for people in related disciplines. Coastal managers may use the book to cover the more theoretical and engineering-related aspects of their trade. Its subject matter is of interest to geographers, planners and coastal scientists alike.

This book is intended as a useful handbook for professionals and researchers in the areas of Physical Oceanography, Marine Geology, Coastal Geomorphology and Coastal Engineering and as a text for graduate students in these fields. With its emphasis on boundary layer flow and basic sediment transport modelling, it is meant to help fill the gap between general hydrodynamic texts and descriptive texts on marine and coastal sedimentary processes. The book commences with a review of coastal bottom boundary layer flows including the boundary layer interaction between waves and steady currents. The concept of eddy viscosity for these flows is discussed in depth because of its relation to sediment diffusivity. The quasi-steady processes of sediment transport over flat beds are discussed. Small scale coastal bedforms and the corresponding hydraulic roughness are described. The motion of suspended sand particles is studied in detail with emphasis on the possible suspension maintaining mechanisms in coastal flows. Sediment pickup functions are provided for unsteady flows. A new combined convection-diffusion model is provided for suspended sediment distributions. Different methods of sediment transport model building are presented together with some

classical models.
Random Seas and Design of Maritime Structures
An Introduction to Coastal Engineering Terminology
Handbook of Coastal and Ocean Engineering
Coastal and Ocean Engineering Practice

This book can potentially serve as a comprehensive textbook for students pursuing this subject either as degree or an elective course. It covers all the fundamental physics behind the different phenomena taking place in the near shore regions and the coast as well as the various methods to estimate its impact. Basic knowledge of water wave mechanics is crucial in understanding the coastal processes taking place in the near shore. The assessment of incident forces due to wind, wave, tide, current etc. is important to evaluate the resultant impact they cause on the shoreline and structures.This book emphasizes the importance of sediment dynamics by analyzing the sediment characteristics, the physics of its motion and movement, factors responsible for the fate of sediments etc. It also highlights the erosion problem which is most prevalent across the sandy coasts, additionally erosion combating methods and techniques are also described with real time field problems and their solutions.A wide range of coastal structures and their design principles are included in this book in order to give the reader a holistic understanding to the readers. This book also includes the design challenges and introduces the reliable modeling tools and techniques, which is very useful for beginners working in this discipline.

After discussions with the U.S. Army Corps of Engineers, the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, and the Office of Naval Research, the National Research Council (NRC) convened a committee under the auspices of the Marine Board to examine present and anticipated national needs in coastal engineering research and education and assess the adequacy and effectiveness of existing institutions in meeting those needs.

Coastal environments are arguably the most important and intensely used of all areas settled by humans. The coastline changes, not only over the centuries or decades but in a matter of hours and minutes. This rapid development applies both to the form of the coastline and to coastal processes. This new book is an introduction to the environments and and processes that occur along the world's coastline. The coastlines of the world provide 'natural laboratories' for investigating the physical, chemical and biological processes that produce the rich diversity of coastal landforms. Introduction to Coastal Processes and Geomorphology begins by addressing generic concepts, global issues and processes that are common to most coastal environments including the morphodynamic paradigm, Quaternary sea-level fluctuations, tides, waves and sediment transport processes. Later chapters address the morphodynamics of the five main types of coastal environments, namely fluvial-, tide-, and wave-dominated environments, rocky coasts, and coral reefs and islands. The final chapter considers the issue of coastal management, and in particular the management of coastal erosion. This comprehensive and in-depth book is an essential reference handbook for students looking to extend their analytical skills and interest in coastal morphodynamics. Fully illustrated throughout, each chapter contains boxed sections designed to aid further study by providing either a further analysis or treatment of a particular issue, an interesting application of a principle just discussed in the body of the text, or a virtual field trip.

Process-based morphodynamic modelling is one of the relatively new tools at the disposal of coastal scientists, engineers and managers. On paper, it offers the possibility to analyse morphological processes and to investigate the effects of various measures one might consider to alleviate some problems. For these to be applied in practice, a model should be relatively straightforward to set up. It should be accurate enough to represent the details of interest, it should run long enough and robustly to see the real effects happen, and the physical processes represented in such a way that the sediment generally goes in the right direction at the right rate. Next, practitioners must be able to judge if the patterns and outcomes of the model are realistic and finally, translate these colour pictures and vector plots to integrated parameters that are relevant to the client or end user. In a nutshell, this book provides an in-depth review of ways to model coastal processes, including many hands-on exercises.

Waves in Oceanic and Coastal Waters
Second Edition
An Introduction to Hydraulics of Fine Sediment Transport
Introduction to Nearshore Hydrodynamics

This book is intended as an introductory textbook for graduate students and as a reference book for engineers and scientists working in the field of coastal engineering. As such it gives a description of the theories for wave and nearshore hydrodynamics. It is meant to de-mystify the topics and hence starts at a fairly basic level. It requires knowledge of fluid mechanics equivalent to a first year graduate level. At the end of each topic, an attempt is made to give an overview of the present stage of the scientific development in that area with numerous references for further studies.

This classic text offers senior and beginning post-graduate student in civil and mechanical engineering or the physical and environmental sciences a well-rounded introduction to coastal engineering. Engineers and physical environmental scientists who have not had the opportunity for formal study in coastal engineering, but would like to become familiar with the subject, will also benefit from this timely resource.

Introductory technical guidance for civil engineers, marine engineers, environmental engineers and costruction managers interested in

coastal engineering. Here is what is discussed:1: PROTECTIVE COASTAL BEACHES AND DUNES2: ESTUARIES3: COASTAL REVETMENTS, SEAWALLS, AND BULKHEADS4: SAND TRANSPORT AND COASTAL DUNES5: TYPES AND FUNCTIONS OF COASTAL STRUCTURES 6: FAILURE MODES OF COASTAL STRUCTURES. Good,No Highlights,No Markup,all pages are intact, Slight Shelfwear,may have the corners slightly dented, may have slight color changes/slightly damaged spine.

Mechanics of Coastal Sediment Transport

Coastal Engineering - Waves, Beaches, Wave-Structure Interactions

A Guide to Modeling Coastal Morphology

Coastal Engineering: Theory And Practice

This book presents observations on the phenomena of fine sediment transport and their explanations under process-related divisions such as flocculation, erosion, and deposition. The text is a compilation of the author's lecture notes from nearly four decades of teaching and guiding graduate students in civil and coastal engineering. Illustrations of fine sediment transport processes and their complexities given in the book are taken from field and laboratory-based observations by the author and his students, as well as numerous investigators. The wide-ranging composition of particles (of inorganic and organic matter), their universal presence and their complex interactions with hydraulic forces make this branch of science a difficult one to deal with in a single treatise. It is therefore essential to study fine sediment transport as an independent subject rather than cover it in no more than a single chapter as many texts on coarse sediment transport have done. Even though the entire coverage is “introductory”, the twelve chapters collectively include more material than what can be reasonably dealt with in a one semester, three-credit course. The book includes an extensive description of the components of fine-grained — especially cohesive — sediment transport. It covers the development of the subject in scientific and engineering applications mainly from the 1950s to its present state. Solved examples and chapter-end exercises are also included. This text is aimed at senior civil engineering undergraduates and graduate students who, in the normal course of their study, seldom come across the subject of fine sediment transport in their curricula. Interested students should have a basic understanding of the mechanics of fluid flow and open channel hydraulics.

Laboratory physical models are a valuable tool for coastal engineers. Physical models help us to understand the complex hydrodynamic processes occurring in the nearshore zone and they provide reliable and economic engineering design solutions.This book is about the art and science of physical modeling as applied in coastal engineering. The aim of the book is to consolidate and synthesize into a single text much of the knowledge about physical modeling that has been developed worldwide.This book was written to serve as a graduate-level text for a course in physical modeling or as a reference text for engineers and researchers engaged in physical modeling and laboratory experimentation. The first three chapters serve as an introduction to similitude and physical models, covering topics such as advantages and disadvantages of physical models, systems of units, dimensional analysis, types of similitude and various hydraulic similitude criteria applicable to coastal engineering models.Practical application of similitude principles to coastal engineering studies is covered in Chapter 4 (Hydrodynamic Models), Chapter 5 (Coastal Structure Models) and Chapter 6 (Sediment Transport Models). These chapters develop the appropriate similitude criteria, discuss inherent laboratory and scale effects and overview the technical literature pertaining to these types of models. The final two chapters focus on the related subjects of laboratory wave generation (Chapter 7) and measurement and analysis techniques (Chapter 8).

This book is based on the author's 49 years of experience as a practicing coastal engineer and 34 years as professor of coastal engineering and management at Queen's University. The book is therefore thoroughly practical in nature, but it also reflects newly relevant issues, such as consequences of failure, impacts of rising sea levels, aging infrastructure, real estate development, and contemporary decision making, design and education. This textbook is useful for undergraduate students, postgraduate students and practicing engineers. It covers waves, structures, sediment movement, coastal management, and contemporary coastal design and decision making. It presents both basic principles and engineering solutions. It discusses the traditional methods of analysis and synthesis (design), but also contemporary design methodologies, such as working with environmental impacts. The second edition expanded greatly on the topics of failure and resilience that surfaced as a result of recent disasters from hurricane surges and tsunamis. It updated the discussion of design and decision making for the 21st century, with many new examples. This third edition develops some of these topics further, but its largest new changes is the chapter on climate change. This chapter presents the basics of climate change and then goes on to stress the practical implications of the impacts of climate change, focusing on what is of importance to coastal and fluvial specialists.

Combines More Than 40 Years of Expert Experience Computational modelling and simulation methods have a wide range of applications in hydraulic and coastal engineering. Computational Modelling in Hydraulic and Coastal Engineering provides an introductory but comprehensive coverage of these methods. It emphasizes the use of the finite differences method with applications in reservoir management, closed-conduit hydraulics, free-surface channel and coastal domain flows, surface gravity waves, groundwater movement, and pollutant and sediment transport processes. It focuses on applications rather than lengthy theories or derivations of complex formulas and is supported by a wealth of hands-on numerical examples and computer codes written in MATLAB but available also in BASIC. PowerPoint presentations and learning assignment projects/quizzes, along with learning assessment rubrics, are included. A comprehensive study highlighting the infinite differences method, this book: Covers the fundamentals of flow in pressurized conduits Contains solutions for the classical Hardy Cross pipe network problem Designates the mathematical description of groundwater flow in confined and unconfined aquifers Provides numerical examples for one- and two-dimensional applications including saltwater intrusion Presents examples of transport of pollutants, sediment and air bubbles using Eulerian and Lagrangian solution methodologies Includes information on weighted residuals, the finite elements method, and the boundary integral method Computational Modelling in Hydraulic and Coastal Engineering suits senior-level undergraduates and graduate students as well as practitioners such as coastal and maritime engineers, environmental engineers, civil engineers, computer modellers, and hydro-geologists.

Introduction to Coastal Processes and Geomorphology

Handbook of Coastal Disaster Mitigation for Engineers and Planners

Coastal Engineering
Basic Coastal Engineering

This book is written for engineers, students of coastal processes and laypersons interested in beach nourishment, which consists of the placement of large quantities of good quality sediment on the beach to advance the shoreline seaward. The improvement of project performance through proper design and the predictability of performance are emphasized. The overall longevity of a project is addressed as are local erosional areas. The roles which wave height, project length and sediment quality play in project performance are addressed quantitatively. The results are illustrated through reference to a number of monitored nourishment projects. Biological and economic aspects of beach nourishment are addressed.

The science and technology of coastal and ocean engineering are closely related to harbour and fishery engineering, because they share a common basic knowledge. However, whereas various publications of coastal engineering, harbour engineering, and ocean engineering have described just the knowledge in their own respective fields, an interrelated and systematic presentation linking them together has yet to be attempted. This book is the first attempt to systematically combine the fields of coastal, ocean, harbour, and fishery engineering from an engineering viewpoint backed by hydrodynamics. Understanding the interaction of waves with structures and sediment, and predicting the associated responses of interest, underlie nearly every problem in coastal and ocean engineering. This is precisely the goal of this book. Although primarily intended for use as a special textbook for graduate students and senior practising engineers, it is hoped that this book will also serve as a useful reference and assist in the further development of this field. With these objectives in mind, each chapter deals with important problems to be solved in the near future. The references included in each chapter should aid students and practising engineers in further broadening their knowledge. This book is the English translation of the original Japanese version published in May, 1991, commemorating the author's retirement from Osaka University. ``Elsevier will be named copyright holder of the English translated publication of the Work. This grant by Gihodo Publishers Ltd. (GP) only pertains to the English language version of the Work and no other rights, except to publish the Work in the English language, are granted to Elsevier Science (ES) by GP, which is acknowledged by ES to be the original copyright holder in the Work.''

Accompanying CD-ROM in pocket at the back of book

Technical dictionary for civil engineers, marine engineers and construction managers, of terminology used in coastal planning and engineering
Turbulence In Coastal And Civil Engineering
Theory and Practice
Coastal Bottom Boundary Layers And Sediment Transport
Introduction to Coastal Engineering and Management (Third Edition)

Text on coastal engineering and oceanography covering theory and applications intended to mitigate shoreline erosion.

This book is based on the author's 34 years of experience as a teacher/researcher of coastal engineering and management and on recent reflections on newly relevant issues, such as consequences of failure, impacts of rising sea levels, aging infrastructure, real estate development, and contemporary decision making, design and education. This textbook for undergraduate students, postgraduate students and practicing engineers covers waves, structures, sediment movement, coastal management, and contemporary coastal design and decision making, presenting both basic principles and engineering solutions. It discusses the traditional methods of analysis and synthesis (design), but also contemporary design taking into account environmental impacts, consequences of failure, and current concerns such as global warming, aging infrastructure, working with stakeholder groups, regulators, etc. This second edition expands greatly on the topics of failure and resilience that surfaced as a result of recent disasters from hurricane surges and tsunamis. It updates the discussion of design and decision making in the 21st century, with many new examples presented.

This handbook contains a comprehensive compilation of topics that are at the forefront of many of the technical advances in ocean waves, coastal, and ocean engineering. More than 70 internationally recognized authorities in the field of coastal and ocean engineering have contributed articles on their areas of expertise to this handbook. These international luminaries are from highly respected universities and renowned research and consulting organizations from all over the world. This handbook provides a comprehensive overview of shallow-water waves, water level fluctuations, coastal and offshore structures, port and harbors, coastal sediment processes, environmental problems, coastal hazards, physical modeling, and other issues in coastal and ocean

engineering. It is an essential reference for professionals and researchers in the areas of coastal engineering, ocean engineering, oceanography, and meteorology, as well as an invaluable text for graduate students in these fields. Sample Chapter(s). Chapter 1: Wave Setup (2,255 KB). Chapter 2: Wavemaker Theories (607 KB). Contents: Shallow-Water Waves: Wave Setup (Robert G Dean and Todd L Walton); Wavemaker Theories (Robert T Hudspeth and Ronald B Guenther); Analyses by the Melnikov Method of Damped Parametrically Excited Cross Waves (Ronald B Guenther and Robert T Hudspeth); Random Wave Breaking and Nonlinearity Evolution Across the Surf Zone (Yoshimi Goda); Aeration and Bubbles in the Surf Zone (Nobuhito Mori, Shohachi Kakuno and Daniel T Cox); Freak Wave (Nobuhito Mori); Short-Term Wave Statistics (Akira Kimura); Water-Level Fluctuations: Generation and Prediction of Seiches in Rotterdam Harbor Basins (Martijn P C de Jong and Jurjen A Battjes); Seiches and Harbor Oscillations (Alexander B Rabinovich); Finite Difference Model for Practical Simulation of Distant Tsunamis (Sung Bum Yoon); Coastal Structures: Tsunami-Induced Forces on Structures (Ioan Nistor, Dan Palermo, Younes Nouri, Tad S Murty and Murat Saatcioglu); Nonconventional Wave Damping Structures (Hocine Oumeraci); Wave Interaction with Breakwaters Including Perforated Walls (Kyung-Duck Suh); Prediction of Overtopping (Jentsje van der Meer, Tim Pullen, William Allsop, Tom Bruce, Holger Schttrumpf and Andreas Kortenhaus); Wave Run-Up and Wave Overtopping at Armored Rubble Slopes and Mounds (Holger Schttrumpf, Jentsje van der Meer, Andreas Kortenhaus, Tom Bruce and Leopoldo Franco); Wave Overtopping at Vertical and Steep Structures (Tom Bruce, Jentsje van der Meer, Tim Pullen and W Allsop); Surf Parameters for the Design of Coastal Structures (Dong Hoon Yoo); Development of Caisson Breakwater Design Based on Failure Experiences (Shigeo Takahashi); Design of Alternative Revetments (Krystian W Pilarczyk); Remarks on Coastal Stabilization and Alternative Solutions (Krystian Pilarczyk); Geotextile Sand Containers for Shore Protection (Hocine Oumeraci and Juan Recio); Low Crested Breakwaters (Alberto Lamberti and Barbara Zanuttigh); Hydrodynamic Behavior of Net Cages in the Open Sea (Yu-Cheng Li); Offshore Structures: State of Offshore Structure Development and Design Challenges (Subrata Chakrabarti); Ports and Harbors: Computer Modeling for Harbor Planning and Design (Jiin-Jen Lee and Xiuying Xing); Prediction of Squat for Underkeel Clearance (Michael J Briggs, Marc Vantorre, Klemens Uliczka and Pierre Debaillon); Coastal Sediment Processes: Wave-Induced Resuspension of Fine Sediment (Mamta Jain and Ashish J Mehta); Suspended Sand and Bedload Transport on Beaches (Nobuhisa Kobayashi, Andres Payo and Bradley D Johnson); Headland-Bay Beaches for Recreation and Shore Protection (John Rong-Chung Hsu, Melissa Meng-Jiuan Yu, Fang-Chun Lee and Richard Silvester); Beach Nourishment (Robert G Dean and Julie D Rosati); Engineering of Tidal Inlets and Morphologic Consequences (Nicholas C Kraus); Environmental Problems: Water and Nutrients Flow in the Enclosed Bays (Yukio Koibuchi & Masahiko Isobe); Sustainable Coastal Development: Socioeconomic and Environmental Risk in Coastal and Ocean Engineering (Miguel A Losada Rodr guez, Asuncion Baquerizo, Miquel Ortega-Sinchez, Juan M Santiago and Elena Sinchez-Badorrey); Utilization of the Coastal Area (Hwung-Hweng Hwung); Coastal Hazards: Ocean Wave Climates: Trends and Variations Due to Earth"s Changing Climate (Paul D Komar, Jonathan C Allan and Peter Ruggiero); Sea Level Rise: Major Implications to Coastal Engineering and Coastal Management (Lesley Ewing); Sea Level Rise and Coastal Erosion (Marcel J F Stive, Roshanka Ranasinghe and Peter J Cowell); Coastal Flooding: Analysis and Assessment of Risk (Panayotis Prinos and Panagiota Galiatsatou); Physical Modeling: Physical Modeling of Tsunami Waves (Michael J Briggs, Harry Yeh and Daniel T Cox); Laboratory Simulation of Waves (Etienne P D Mansard and Michael D Miles); Coastal Engineering Practice and Education: Perspective on Coastal Engineering Practice and Education (J William Kamphuis). Readership: Graduate students, researchers and professionals in coastal and ocean engineering, oceanography and meteorology."

In the 20 years since publication of the first edition of this book there have been a number of significant changes in the practice of coastal engineering. This new edition has been completely rewritten to reflect these changes as well as to make other improvements to the material presented in the original text. _ Basic Coastal Engineering is an introductory text on wave mechanics and coastal processes along with the fundamentals of the practice of coa~tal engi neering. This book was written for a senior or first postgraduate course in coastal engineering. It is also suitable for self study by anyone having a basic engineering or physical science background. The level of coverage does not require a math or fluid mechanics background beyond that presented in a typical undergraduate civil or mechanical engineering curriculum. The material presented in this text is based on the author's lecture notes from a one-semester course at Virginia Pol ytechnic Institute, Texas A&M University, and George Washington

University, and a senior elective course at Lehigh University. The text contains examples to demonstrate the various analysis techniques that are presented and each chapter (except the first and last) has a collection of problems for the reader to solve that further demonstrate and expand upon the text material. Chapter 1 briefly describes the coastal environment and introduces the rela tively new field of coastal engineering.

Coastal, Estuarial and Harbour Engineer's Reference Book

Modelling for Coastal Hydraulics and Engineering

Coastal Processes

Concepts in Coastal Engineering and Their Applications to Multifarious Environments

Waves in Oceanic and Coastal Waters describes the observation, analysis and prediction of wind-generated waves in the open ocean, in shelf seas, and in coastal regions with islands, channels, tidal flats and inlets, estuaries, fjords and lagoons. Most of this richly illustrated book is devoted to the physical aspects of waves. After introducing observation techniques for waves, both at sea and from space, the book defines the parameters that characterise waves. Using basic statistical and physical concepts, the author discusses the prediction of waves in oceanic and coastal waters, first in terms of generalised observations, and then in terms of the more theoretical framework of the spectral energy balance. He gives the results of established theories and also the direction in which research is developing. The book ends with a description of SWAN (Simulating Waves Nearshore), the preferred computer model of the engineering community for predicting waves in coastal waters.

Successful coastal and ocean engineering projects rely on practical experience with technical tools and knowledge available to the engineer. Often, problems arise from projects that are too complex for theoretical description, which require that engineers exercise sound judgment in addition to reliance on past practical experience. This book focuses on the latest technology applied in design and construction, effective engineering methodology, unique projects and problems, design and construction challenges, and other lessons learned. In addition, unique practices in planning, design, construction, maintenance, and performance of coastal and ocean projects will be explored.

This handbook is the definitive reference for the interdisciplinary field that is ocean engineering. It integrates the coverage of fundamental and applied material and encompasses a diverse spectrum of systems, concepts and operations in the maritime environment, as well as providing a comprehensive update on contemporary, leading-edge ocean technologies. Coverage includes an overview on the fundamentals of ocean science, ocean signals and instrumentation, coastal structures, developments in ocean energy technologies and ocean vehicles and automation. It aims at practitioners in a range of offshore industries and naval establishments as well as academic researchers and graduate students in ocean, coastal, offshore and marine engineering and naval architecture. The Springer Handbook of Ocean Engineering is organized in five parts: Part A: Fundamentals, Part B: Autonomous Ocean Vehicles, Subsystems and Control, Part C: Coastal Design, Part D: Offshore Technologies, Part E: Energy Conversion

A major new reference book bringing together wide-ranging expert guidance on coastal engineering, including harbours and estuaries. It covers both traditional engineering topics and the fast developing areas of mathematical modelling and computer simulation.

An Introduction to Coastal Engineering

Coastal and Estuarine Processes

Beach Nourishment

Introduction to Coastal Engineering and Management

field trips." --Book Jacket.

Features concepts in coastal engineering and their application to coastal processes and disaster prevention works. This title describes basic concepts of coastal engineering, dealing mainly with wave-induced physical

It consists of the author's results of 30 years' scientific research on the progress of coastal sediment transport study.

This book covers water waves, surf zone hydrodynamics, tides in oceans and estuaries, storm surges, estuarine mixing, basic sediment transport, coastal morphodynamics and coastal groundwater dynamics. It is an i treatment, suitable for a first course in coastal and estuarine processes for earth scientists or engineers. Yet, there are substantial amounts of new material that are included, such as the explicit, analytical treatment of forced long waves. Inclusion of this material will in turn strongly enhance the introductory treatment of tsunami, storm surges and surf beat. The treatment of sine wave theory emphasizes expressions which are explici water depth h (using koh instead of kh) so that they can easily be differentiated or integrated with respect to h. This is a major pedagogical advantage because of the enhanced transparency. The treatment of turbulent includes finite mixing length effects which provide an explanation for differential diffusion of different sediment sizes in suspension. The effects of acceleration skewness and boundary layer streaming are also included basic sediment transport models. The inclusion of beach groundwater dynamics — including the mechanisms by which waves as well as tides drive groundwater motion — provides a link between the previously uncon of coastal hydraulics and regional groundwater modeling. Serving as a good reference book, it is fully indexed and comprehensively cross referenced. Abundant references to more detailed texts are also provided.

Coastal Processes with Engineering Applications

Lecture Notes for Introduction to Coastal Engineering and Breakwaters
Computational Modelling in Hydraulic and Coastal Engineering
Introduction to Coastal Engineering and Management (2nd Edition)