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Applied Offshore Structural Engineering Offshore Structures Offshore Structural Engineering Essentials of Offshore Structures Ageing and Life Extension of Offshore Structures Offshore Structural Engineering Mooring System Engineering for Offshore Structures Marine Structural Design Applied Offshore Structural Engineering Dynamic Analysis and Design of Offshore Structures Marine Structures Engineering: Specialized Applications Modern Earthquake Engineering Structural Health Monitoring With Application To Offshore Structures Offshore Semi-Submersible Platform Engineering Offshore Projects and Engineering Management Marine Structural Design Calculations Assessment, Evaluation, and Repair of Concrete, Steel, and Offshore Structures Integrity of Offshore Structures Practical Engineering Management of Offshore Oil and Gas Platforms Handbook of Bottom Founded Offshore Structures Asset Integrity Management for Offshore and Onshore Structures Offshore Structure Modeling Offshore Mechanics Condition Assessment of Aged Structures Advanced Marine Structures Analysis and Design of Marine Structures Subsea Engineering Handbook Tubular Members in Offshore Structures Design Aids of Offshore Structures Under Special Environmental Loads including Fire Resistance Nonlinear Analysis of Offshore Structures Tubular Members in Offshore Structures Offshore Structures Recent Concepts in Offshore Structural Engineering Design and Analysis of Tall and Complex Structures Offshore Energy Structures Dynamics of Fixed Marine Structures Dynamics of Offshore Structures Analysis and Software of Cylindrical Members Dynamics of Offshore Structures Wind Effects on Structures

Dynamics of Offshore Structures Jan 24 2020 A textbook for upper division or graduate students of ocean or naval engineering presenting the main subject areas that contribute to the design, construction, installation and operation of fixed and floating offshore structures, with emphasis on the fundamentals of oceanography, basic fluid mechanics, wave theory, hydrodynamics, naval architecture and structural analysis. Annotation copyrighted by Book News, Inc., Portland, OR

Applied Offshore Structural Engineering Jun 22 2022

Practical Engineering Management of Offshore Oil and Gas Platforms Aug 13 2021 Practical Engineering Management of Offshore Oil and Gas Platforms delivers the first must-have content to the multiple engineering managers and clients devoted to the design, equipment, and operations of offshore oil and gas platforms. Concepts explaining how to interact with the various task forces, getting through bid proposals, and how to maintain project control are all covered in the necessary training reference. Relevant equipment and rule of thumb techniques to calculate critical features on the design of the platform are also covered, including tank capacities and motor power, along with how to consistently change water, oil, and gas production profiles over the course of a project. The book helps offshore oil and gas operators and engineers gain practical understanding of the multiple disciplines involved in offshore oil and gas projects using experience-based approaches and lessons learned. Delivers the first ever must-have content to the multiple engineering managers and clients devoted to the design, equipment, and operations of offshore oil and gas platforms Contains rules of thumb techniques to calculate critical features on the design of the platform Includes practical checklists for project estimates and cost evaluation for effective project execution in budgeting and scheduling Helps offshore oil and gas operators and engineers gain practical understanding of the multiple

disciplines involved in offshore oil and gas projects using experience-based approaches and lessons learned

Offshore Structural Engineering Dec 29 2022 Successfully estimate risk and reliability, and produce innovative, yet reliable designs using the approaches outlined in Offshore Structural Engineering: Reliability and Risk Assessment. A hands-on guide for practicing professionals, this book covers the reliability of offshore structures with an emphasis on the safety and reliability of offshore facilities during analysis, design, inspection, and planning. Since risk assessment and reliability estimates are often based on probability, the author utilizes concepts of probability and statistical analysis to address the risks and uncertainties involved in design. He explains the concepts with clear illustrations and tutorials, provides a chapter on probability theory, and covers various stages of the process that include data collection, analysis, design and construction, and commissioning. In addition, the author discusses advances in geometric structural forms for deep-water oil exploration, the rational treatment of uncertainties in structural engineering, and the safety and serviceability of civil engineering and other offshore structures. An invaluable guide to innovative and reliable structural design, this book: Defines the structural reliability theory Explains the reliability analysis of structures Examines the reliability of offshore structures Describes the probabilistic distribution for important loading variables Includes methods of reliability analysis Addresses risk assessment and more Offshore Structural Engineering: Reliability and Risk Assessment provides an in-depth analysis of risk analysis and assessment and highlights important aspects of offshore structural reliability. The book serves as a practical reference to engineers and students involved in naval architecture, ocean engineering, civil/structural, and petroleum engineering.

Asset Integrity Management for Offshore and Onshore Structures Jun 10 2021 Oil and gas assets are under constant pressure and engineers and managers need integrity management training and strategies to ensure their operations are safe. Gaining practical guidance is not trained ahead of time and learned on the job. Asset Integrity Management of Offshore and Onshore Structures delivers a critical training tool for engineers to prepare and mitigate safety risk. Starting with a transitional introductory chapter, the reference dives into integrity management approaches including codes and standards. Inspection, assessment, and repair methods are covered for offshore, FPSO, onshore and pipelines. Suggested proactive approaches and modeling risk-based inspection are also included. Supported with case studies, detailed discussions, and practical applications, Asset Integrity Management of Offshore and Onshore Structures gives oil and gas managers a reference to extend asset life, reduce costs, and minimize impact to personnel and environment. Bridge between the theory of integrity management into oil and gas application Understand the strategies and techniques to mitigate corrosion affect, assessment, inspection, and repairs from real-world examples Manage a variety of assets including offshore, subsea, pipelines, and onshore

Assessment, Evaluation, and Repair of Concrete, Steel, and Offshore Structures Oct 15 2021 Civil engineers must assure that buildings have long and durable lives, and therefore structural assessment and repair are routinely required and must be performed with the utmost accuracy and professionalism. Assessment, Evaluation, and Repair of Concrete, Steel, and Offshore Structures presents the typical causes of structural failure and their mechanisms, discusses the most up-to-date methods for evaluation and structural assessment, and explains the best project management strategies from the feasibility stage through operations and maintenance. Numerous types of structures are examined and are further illustrated by relevant case studies. Features: Examines the probability of several types of structural failure and includes reliability analysis. Presents best practices

for predicting the structural lifetime for both onshore and offshore structures and reviews the most advanced methods for repair. Includes numerous practical case studies of structural failure and offers mitigation strategies depending of type of structure.

Ageing and Life Extension of Offshore Structures Oct 27 2022 A comprehensive overview of managing and assessing safety and functionality of ageing offshore structures and pipelines A significant proportion, estimated at over 50%, of the worldwide infrastructure of offshore structures and pipelines is in a life extension phase and is vulnerable to ageing processes. This book captures the central elements of the management of ageing offshore structures and pipelines in the life extension phase. The book gives an overview of: the relevant ageing processes and hazards; how ageing processes are managed through the life cycle, including an overview of structural integrity management; how an engineer should go about assessing a structure that is to be operated beyond its original design life, and how ageing can be mitigated for safe and effective continued operation. Key Features: Provides an understanding of ageing processes and how these can be mitigated. Applies engineering methods to ensure that existing structures can be operated longer rather than decommissioned unduly prematurely. Helps engineers performing these tasks in both evaluating the existing structures and maintaining ageing structures in a safe manner. The book gives an updated summary of current practice and research on the topic of the management of ageing structures and pipelines in the life extension phase but also meets the needs of structural engineering students and practicing offshore and structural engineers in oil & gas and engineering companies. In addition, it should be of value to regulators of the offshore industry.

Essentials of Offshore Structures Nov 27 2022 *Essentials of Offshore Structures: Framed and Gravity Platforms* examines the engineering ideas and offshore drilling platforms for exploration and production. This book offers a clear and acceptable demonstration of both the theory and application of the relevant procedures of structural, fluid, and geotechnical mechanics to offshore structures. It

Condition Assessment of Aged Structures Mar 08 2021 Any structural system in service is subject to age-related deterioration, leading to potential concerns regarding maintenance, health & safety, environmental and economic implications. Condition assessment of aged structures is an invaluable, single source of information on structural assessment techniques for marine and land-based structures such as ships, offshore installations, industrial plant and buildings. Topics covered include: - Current practices and standards for structural condition assessment - Fundamental mechanisms and advanced mathematical methods for predicting structural deterioration - Residual strength assessment of deteriorated structures - Inspection and maintenance of aged structures - Reliability and risk assessment of aged structures Professionals from a broad range of disciplines will be able to gain a better understanding of current practices and standards for structural condition assessment or health monitoring, and what future trends might be. Single source of information on structural assessment techniques for marine and land-based structures Examines the residual strength and reliability of aged structures Assesses current practices covering inspection, health monitoring and maintenance

Marine Structural Design Calculations Nov 15 2021 The perfect guide for veteran structural engineers or for engineers just entering the field of offshore design and construction, *Marine Structural Design Calculations* offers structural and geotechnical engineers a multitude of worked-out marine structural construction and design calculations. Each calculation is discussed in a concise, easy-to-understand manner that provides an authoritative guide for selecting the right formula and solving even the most difficult design calculation. Calculation methods for all areas of marine structural design and construction are presented and practical solutions are provided. Theories, principles,

and practices are summarized. The concentration focuses on formula selection and problem solving. A "quick look up guide", *Marine Structural Design Calculations* includes both fps and SI units and is divided into categories such as Project Management for Marine Structures; Marine Structures Loads and Strength; Marine Structure Platform Design; and Geotechnical Data and Pile Design. The calculations are based on industry code and standards like American Society of Civil Engineers and American Society of Mechanical Engineers, as well as institutions like the American Petroleum Institute and the US Coast Guard. Case studies and worked examples are included throughout the book. Calculations are based on industry code and standards such as American Society of Civil Engineers and American Society of Mechanical Engineers Complete chapter on modeling using SACS software and PDMS software Includes over 300 marine structural construction and design calculations Worked-out examples and case studies are provided throughout the book Includes a number of checklists, design schematics and data tables

Offshore Structure Modeling May 10 2021 While the existing literature on offshore structures touch on model testing, a comprehensive text discussing the design, construction, instrumentation, testing and analysis of the physical model is lacking. This book fills that vacuum and provides, through its survey of the theoretical and practical aspects of physical modeling, an in-depth coverage of the technology of model testing. Its usefulness runs through the entire field of engineering, reaching far beyond its focus on offshore construction; and its breadth of scope should appeal not only to engineers and naval architects but to scientists interested in structural or hydraulic testing as well. Contents: Introduction Modeling Laws Model Construction Techniques Model Testing Facility Modeling of Environment Instrumentation and Signal Control Modeling of Fixed Offshore Structures Modeling of Offshore Operations Seakeeping Tests Data Analysis Techniques Readership: Undergraduates and engineers in coastal engineering, naval architects, scientists interested in structural or hydraulic testing. keywords: Physical Modeling; Scaling Laws; Hydrodynamics; Testing Facilities: Instruments; Offshore Structures; Wave Generation; Seakeeping "... a thorough and well-written book ... could only have been written by someone with a wealth of personal experience. The breadth of material in each chapter is truly impressive and valuable; and the abundance of relevant references ... adds considerably to the value of the book. These references will be especially beneficial to those wishing to pursue the individual topics in more detail ... it will serve as a valuable reference to anyone working in this field. It is an important contribution to the field of offshore modelling." Coastal Engineering

Marine Structures Engineering: Specialized Applications Apr 20 2022 *Marine Structures Engineering* is designed to help engineers meet the growing worldwide demand for construction of new ports and the modernization of existing ports and terminals. It provides an authoritative guide to the design, construction, rehabilitation, repair, and maintenance of port and harbor structures. Each chapter is self-contained, allowing readers to access specific information. The Author draws on his extensive experience in offshore structure and port engineering to demonstrate evaluation, rehabilitation, repair, and maintenance of in-service marine structures. Also covered in detail are state-of-the-art approaches to: *marine structures in cold regions, with special attention to the role of ice loads, permafrost, and other ice effects *shiplifts, marine railways, shipways, and dry docks *offshore moorings *floating breakwaters *marinas *structures that protect bridge piers from ship impact. Offering practical information on all aspects of marine structures, this book serves as an indispensable resource to all engineers and professionals involved in design, construction, maintenance, and modernization of ports and harbors.

Advanced Marine Structures Feb 04 2021 Due in part to a growing demand for offshore oil and gas exploration, the development of marine structures that initially started onshore is

now moving into deeper offshore areas. Designers are discovering a need to revisit basic concepts as they anticipate the response behavior of marine structures to increased water depths. Providing a simplified approach to the subject, *Advanced Marine Structures* explains the fundamentals and advanced concepts of marine architecture introduces various types of offshore platforms, and outlines the different stages of marine structure analysis and design. Written from a structural engineering perspective, this book focuses on structures constructed for offshore oil and gas exploration, various environmental loads, ultimate load design, fluid-structure interaction, fatigue, and fracture. It also offers detailed descriptions of different types of structural forms, functions and limitations of offshore platforms and explains how different loads act on each. In addition, the text incorporates examples and application problems to illustrate the use of experimental, numerical, and analytical studies in the design and development of marine structures, and reviews relevant literature on wave interaction and porous cylinders. This book: Focuses on structural reliability Deliberates on fracture and fatigue and examines their application in marine structures Introduces ideas on the retrofit and renovation of marine structures Examines the strength analysis of offshore structures and structural members *Advanced Marine Structures* examines the design of offshore structures from a structural engineering perspective and explains the design methodologies and guidelines needed for the progressive conceptualization and design of advanced marine structures.

Design Aids of Offshore Structures Under Special Environmental Loads including Fire Resistance Oct 03 2020 This book provides detailed analysis methods and design guidelines for fire resistance, a vital consideration for offshore processing and production platforms. Recent advancements in the selection of various geometric structural forms for deep-water oil exploration and production require a detailed understanding of the design of offshore structures under special loads. Focusing on a relatively new aspect of offshore engineering, the book offers essential teaching material, illustrating and explaining the concepts discussed through many tutorials. It creates a basis for designing new courses for students of ocean engineering and naval architecture, civil engineering, and applied mechanics at both undergraduate and graduate levels. As such, its content can be used for self-study or as a text in structured courses and professional development programs.

Dynamics of Offshore Structures Nov 23 2019 Unique, cutting-edge material on structural dynamics and natural forces for offshore structures Using the latest advances in theory and practice, *Dynamics of Offshore Structures, Second Edition* is extensively revised to cover all aspects of the physical forces, structural modeling, and mathematical methods necessary to effectively analyze the dynamic behavior of offshore structures. Both closed-form solutions and the Mathematica(r) software package are used in many of the up-to-date example problems to compute the deterministic and stochastic structural responses for such offshore structures as buoys; moored ships; and fixed-bottom, cable-stayed, and gravity-type platforms. Throughout the book, consideration is given to the many assumptions involved in formulating a structural model and to the natural forces encountered in the offshore environment. These analyses focus on plane motions of elastic structures with linear and nonlinear restraints, as well as motions induced by the forces of currents, winds, earthquakes, and waves, including the latest theories and information on wave mechanics. Topics addressed include multidegree of freedom linear structures, continuous system analysis (including the motion of cables and pipelines), submerged pile design, structural modal damping, fluid-structure-soil interactions, and single degree of freedom structural models that, together with plane wave loading theories, lead to deterministic or time history predictions of structural responses. These analyses are extended to statistical descriptions of both wave loading and structural motion. *Dynamics of Offshore Structures, Second Edition* is a valuable text for students in civil and

mechanical engineering programs and an indispensable resource for structural, geotechnical, and construction engineers working with offshore projects.

Dynamic Analysis and Design of Offshore Structures May 22 2022 This book introduces readers to various types of offshore platform geometries. It addresses the various environmental loads encountered by these structures, and provides detailed descriptions of the fundamentals of structural dynamics in a classroom style, helping readers estimate damping in offshore structures and grasp these aspects' applications in preliminary analysis and design. Basic concepts of structural dynamics are emphasized through simple illustrative examples and exercises. Design methodologies and guidelines, which are FORM based concepts, are explained through a selection of applied sample structures. Each chapter also features tutorials and exercises for self-learning. A dedicated chapter on stochastic dynamics helps students to extend the basic concepts of structural dynamics to this advanced domain of research. Hydrodynamic response of offshore structures with perforated members is one of the most recent research applications, and has proven to be one of the most effective means of retrofitting offshore structures. In addition, the book integrates the concepts of structural dynamics with the FORM-evolved design of offshore structures, offering a unique approach. This new edition is divided into seven chapters, each of which has been updated. Each chapter also includes a section on frequently asked Questions and Answers (Q&A), which enhances understanding of this complex subject through easy and self-explanatory text. Furthermore, the book presents valuable content with respect to new and recent research carried out by the author in structural dynamics. All numeric examples have been re-checked with more additional explanations. New exercises have been added to improve understanding of the subject matter. Computer coding is also included (wherever possible) to aid computer-based learning of the contents of the book. The book can serve as a textbook for senior undergraduate and graduate courses in civil, structural, applied mechanics, mechanical, aerospace, naval architecture and ocean engineering programs. The book can also serve as a text for professional learning and development programs or as a guide for practicing and consulting offshore structural engineers. The contents of this book will be useful to graduate students, researchers, and professionals alike.

Applied Offshore Structural Engineering Feb 28 2023

Tubular Members in Offshore Structures Nov 03 2020

Handbook of Bottom Founded Offshore Structures Jul 12 2021 Offshore Engineering continues to develop and expand rapidly. While in the public eye its focus has shifted towards subsea and floating developments in ever deeper waters, bottom founded structures are still at the industry's heart. The fixed structure remains its dependable workhorse and even today newly installed fixed structures far outnumber subsea and floating applications. Additionally, the knowledge and technology that have (literally) pushed the boundaries of Offshore Engineering into ever more demanding environments and water depths have been largely pioneered by bottom founded structures. An engineer's central skill is to develop coherent and balanced models for the problems encountered. Regrettably, due to availability of ever more sophisticated computer applications this expertise is at risk of getting lost, and adopting computer outcomes without truly understanding the models and their limitations is naive, risky and unprofessional. Therefore, every engineer needs fundamental knowledge and understanding of underlying theories and technologies. This Handbook is intended to help offshore engineers acquire and sustain relevant expertise in some notoriously difficult subjects. It attempts to stimulate reflection and critical evaluation of the models used and the strengths and weaknesses of the solutions found. While dealing more specifically with bottom founded structures, the material is generally applicable to offshore structures of all

types. The Handbook can be used as a textbook for Master's students and as a manual and reference guide for practising professionals.

Integrity of Offshore Structures Sep 13 2021 Papers presented at the Fourth International Symposium on Integrity of Offshore Structures, 2-3 July 1990, Kelvin Conference Centre, University of Glasgow, Scotland organized by the Department of Naval Architecture and Ocean Engineering and Mechanical Engineering.

Analysis and Design of Marine Structures Jan 06 2021 'Analysis and Design of Marine Structures' explores recent developments in methods and modelling procedures for structural assessment of marine structures: - Methods and tools for establishing loads and load effects; - Methods and tools for strength assessment; - Materials and fabrication of structures; - Methods and tools for structural design and optimisation; - Structural reliability, safety and environment protection. The book is a valuable reference source for academics, engineers and professionals involved in marine structures and design of ship and offshore structures.

Offshore Structural Engineering Sep 25 2022

Marine Structural Design Jul 24 2022 Marine Structural Design, Second Edition, is a wide-ranging, practical guide to marine structural analysis and design, describing in detail the application of modern structural engineering principles to marine and offshore structures. Organized in five parts, the book covers basic structural design principles, strength, fatigue and fracture, and reliability and risk assessment, providing all the knowledge needed for limit-state design and re-assessment of existing structures. Updates to this edition include new chapters on structural health monitoring and risk-based decision-making, arctic marine structural development, and the addition of new LNG ship topics, including composite materials and structures, uncertainty analysis, and green ship concepts. Provides the structural design principles, background theory, and know-how needed for marine and offshore structural design by analysis Covers strength, fatigue and fracture, reliability, and risk assessment together in one resource, emphasizing practical considerations and applications Updates to this edition include new chapters on structural health monitoring and risk-based decision making, and new content on arctic marine structural design

Offshore Semi-Submersible Platform Engineering Jan 18 2022 Offshore Semi-Submersible Platform Engineering presents a primer on the analysis and design of semi-submersible platforms, in particular, while also covering general analysis and design guidelines of offshore compliant platforms. It introduces general structural designs and also examines the details of the various environmental impacts that act upon them, such as fatigue, fire, collisions, and water waves. Features Provides thorough coverage of the dynamic analysis and design of semi-submersible platforms Assists readers through detailed analysis methods using MATLAB® as well as other computer programs used to carry out structural analysis Explains impact loading and dynamic response through numerical analysis and examines the various factors that affect semi-submersibles Presented in a coursework teaching style, the content is explained in a step-by-step manner using color figures, photos, screen shots, and illustrations, thereby enabling students, researchers, and practicing engineers to carry out analysis with ease Offshore Semi-Submersible Platform Engineering serves as a practical guide for upper-level students and graduates of various engineering disciplines, for example, naval architecture, and structural, mechanical, pipeline, and offshore engineering. Further, it can also be used as a reference for practicing professionals, as the book covers a broad range of scholarships and applications.

Mooring System Engineering for Offshore Structures Aug 25 2022 The mooring system is a vital component of various floating facilities in the oil, gas, and renewables industries.

However, there is a lack of comprehensive technical books dedicated to the subject. *Mooring System Engineering for Offshore Structures* is the first book delivering in-depth knowledge on all aspects of mooring systems, from design and analysis to installation, operation, maintenance and integrity management. The book gives beginners a solid look at the fundamentals involved during mooring designs with coverage on current standards and codes, mooring analysis and theories behind the analysis techniques. Advanced engineers can stay up-to-date through operation, integrity management, and practical examples provided. This book is recommended for students majoring in naval architecture, marine or ocean engineering, and allied disciplines in civil or mechanical engineering. Engineers and researchers in the offshore industry will benefit from the knowledge presented to understand the various types of mooring systems, their design, analysis, and operations. Understand the various types of mooring systems and the theories behind mooring analysis Gain practical experience and lessons learned from worldwide case studies Combine engineering fundamentals with practical applications to solve today's offshore challenges

Wind Effects on Structures Oct 22 2019 Provides structural engineers with the knowledge and practical tools needed to perform structural designs for wind that incorporate major technological, conceptual, analytical and computational advances achieved in the last two decades. With clear explanations and documentation of the concepts, methods, algorithms, and software available for accounting for wind loads in structural design, it also describes the wind engineer's contributions in sufficient detail that they can be effectively scrutinized by the structural engineer in charge of the design. *Wind Effects on Structures: Modern Structural Design for Wind, 4th Edition* is organized in four sections. The first covers atmospheric flows, extreme wind speeds, and bluff body aerodynamics. The second examines the design of buildings, and includes chapters on aerodynamic loads; dynamic and effective wind-induced loads; wind effects with specified MRIs; low-rise buildings; tall buildings; and more. The third part is devoted to aeroelastic effects, and covers both fundamentals and applications. The last part considers other structures and special topics such as trussed frameworks; offshore structures; and tornado effects. Offering readers the knowledge and practical tools needed to develop structural designs for wind loadings, this book: Points out significant limitations in the design of buildings based on such techniques as the high-frequency force balance Discusses powerful algorithms, tools, and software needed for the effective design for wind, and provides numerous examples of application Discusses techniques applicable to structures other than buildings, including stacks and suspended-span bridges Features several appendices on Elements of Probability and Statistics; Peaks-over-Threshold Poisson-Process Procedure for Estimating Peaks; estimates of the WTC Towers' Response to Wind and their shortcomings; and more *Wind Effects on Structures: Modern Structural Design for Wind, 4th Edition* is an excellent text for structural engineers, wind engineers, and structural engineering students and faculty.

Subsea Engineering Handbook Dec 05 2020 The offshore industry continues to drive the oil and gas market into deeper drilling depths, more advanced subsea systems, and cross into multiple disciplines to further technology and equipment. Engineers and managers have learned that in order to keep up with the evolving market, they must have an all-inclusive solution reference. *Subsea Engineering Handbook, Second Edition* remains the go-to source for everything related to offshore oil and gas engineering. Enhanced with new information spanning control systems, equipment QRA, electric tree structures, and manifold designs, this reference is still the one product engineers rely on to understand all components of subsea technology. Packed with new chapters on subsea processing and boosting equipment as well as coverage on newer valves and actuators, this handbook

explains subsea challenges and discussions in a well-organized manner for both new and veteran engineers to utilize throughout their careers. Subsea Engineering Handbook, Second Edition remains the critical road map to understand all subsea equipment and technology. Gain access to the entire spectrum of subsea engineering, including the very latest on equipment, safety, and flow assurance systems Sharpen your knowledge with new content coverage on subsea valves and actuators, multiphase flow loop design, tree and manifold design as well as subsea control Practice and learn with new real-world test examples and case studies

Offshore Structures Jun 30 2020 This updated translation from the original German edition provides general background information on oceanology and ocean engineering is given, along with descriptions of drilling techniques, offshore structures and hydrocarbon production at sea. The main part of the book is concerned with the hydrostatic and hydrodynamic analysis of marine structures, followed by an evaluation of marine structure reliability. Environmental conditions affecting marine structures, wave statistics, and the application of reliability theory to code development are also discussed. Students and practising engineers who have an interest in the analysis of marine structures will find this book an invaluable reference.

Structural Health Monitoring With Application To Offshore Structures Feb 16 2022 Structural Health Monitoring (SHM) deals with assessment, evaluation and technical diagnosis of different structural systems of strategic importance. Extensive knowledge of SHM shall lead to a clear understanding of risk and reliability assessment of structures, which is currently mandatory for structures of strategic importance like bridges, offshore structures, etc. This comprehensive compendium features explanations and salient illustrations of SHM with applications to civil engineering structures, in general and offshore structures, in particular. The book is unique with respect to its contents, experimental case studies in lab scale and text presentation style. A detailed subject matter of this nature is currently scarce in the literature market. The must-have volume is a useful reference text for senior undergraduate and postgraduate students, professionals, academics and researchers in civil engineering, ocean engineering, mechanical engineering, and structural engineering.

Offshore Energy Structures Mar 27 2020 This book provides all the key information needed to design offshore structures for renewable energy applications successfully. Suitable for practicing engineers and students, the author conveys design principles and best practices in a clear, concise manner, focusing on underlying physics while eschewing complicated mathematical detail. The text connects underlying scientific theory with industry standards and practical implementation issues for offshore wind turbines, wave energy converters and current turbines. Combined concepts such as wave-wind energy platforms are discussed, as well. Coverage of design codes and numerical tools ensures the usefulness of this resource for all those studying and working in the rapidly expanding field of offshore renewable energy.

Nonlinear Analysis of Offshore Structures Sep 01 2020 The importance of accounting for nonlinear effects in offshore structures has increased due to their higher utilization and extended service lives. This text addresses new methods for advanced analysis of offshore structures developed during the 1990s.

Modern Earthquake Engineering Mar 20 2022 This book addresses applications of earthquake engineering for both offshore and land-based structures. It is self-contained as a reference work and covers a wide range of topics, including topics related to engineering seismology, geotechnical earthquake engineering, structural engineering, as well as special contents dedicated to design philosophy, determination of ground motions, shock waves, tsunamis, earthquake damage, seismic response of offshore and arctic structures,

spatial varied ground motions, simplified and advanced seismic analysis methods, sudden subsidence of offshore platforms, tank liquid impacts during earthquakes, seismic resistance of non-structural elements, and various types of mitigation measures, etc. The target readership includes professionals in offshore and civil engineering, officials and regulators, as well as researchers and students in this field.

Dynamics of Fixed Marine Structures Feb 25 2020 Dynamics of Fixed Marine Structures, Third Edition proves guidance on the dynamic design of fixed structures subject to wave and current action. The text is an update of the "UR8" design guide "Dynamics of Marine Structures" with discussion of foundations, wind turbulence, offshore installations, earthquakes, and strength and fatigue. The book employs analytical methods of static and dynamic structural analysis techniques, particularly the statistical and spectral methods when applied to loading and in the calculating dynamic responses. The statistical methods are explained when used to wave, wind, and earthquake calculations, together with the problems encountered in actual applications. Of importance to fixed offshore platforms are the soil properties and foundation covering soil behavior, site investigation, testing, seabed stability, gravity structures, and the use of single piles. Methods of forecasting, measuring, and modeling of waves and currents are also presented in offshore structure construction. Basic hydrodynamics is explained in understanding wave theory, and some description is given to forecasting of environmental conditions that will affect the structures. The effects of vortex-induced vibrations on the structure are explained, and the three methods that can prevent vortex-induced oscillations are given. Wind turbulence or wind loads are analyzed against short natural period or long natural periods of structures. The transportation of offshore platforms, installation, and pile driving, including examples of the applications found in the book, are given as well. The guide is helpful for offshore engineers, designers of inshore jetties, clients needing design and analysis work, specialists related to offshore structural engineering, and students in offshore engineering.

Recent Concepts in Offshore Structural Engineering May 29 2020

Offshore Structures Jan 30 2023 Offshore Structures: Design, Construction and Maintenance, Second Edition covers all types of offshore structures and platforms employed worldwide. As the ultimate reference for selecting, operating and maintaining offshore structures, this book provides a roadmap for designing structures which will stand up even in the harshest environments. Subsea pipeline design and installation is also covered in this edition, as is the selection of the proper type of offshore structure, the design procedure for the fixed offshore structure, nonlinear analysis (Push over) as a new technique to design and assess the existing structure, and more. With this book in hand, engineers will have the most up-to-date methods for performing a structural lifecycle analysis, implementing maintenance plans for topsides and jackets and using non-destructive testing. Provides a one-stop guide to offshore structure design and analysis Presents easy-to-understand methods for structural lifecycle analysis Contains expert advice for designing offshore platforms for all types of environments

Offshore Projects and Engineering Management Dec 17 2021 Offshore Projects and Engineering Management delivers a critical training tool for engineers on how to prepare cost estimates and understand the most recent management methods. Specific to the oil and gas offshore industry, the reference dives into project economics, interface management and contracts. Methods for analyzing risk, activity calculations and risk response strategies are covered for offshore, FPSO and pipelines. Supported with case studies, detailed discussions, and practical applications, this comprehensive book gives oil and gas managers a management toolbox to extend asset life, reduce costs and minimize impact to personnel and environment. Oil and gas assets are under constant pressure and engineers and managers need engineering management training and

strategies to ensure their operations are safe and cost effective. This book helps manage the ramp up to the management of offshore structures. Discusses engineering management for new and existing offshore platforms, including FPSOs and subsea pipelines Presents everything a reader needs to understand the most recent PMP modules and management methods Provides the best tools, tactics and forms through several practical case studies

Tubular Members in Offshore Structures Aug 01 2020

Analysis and Software of Cylindrical Members Dec 25 2019 This book provides an in-depth look at the behavior, design, and construction of offshore structures. It describes the behavior of cylindrical members and suggests appropriate software, written by the contributors, to determine everything from loading up to the ultimate load, including post-buckling and cyclic inelasticity.

Offshore Mechanics Apr 08 2021 Covers theoretical concepts in offshore mechanics with consideration to new applications, including offshore wind farms, ocean energy devices, aquaculture, floating bridges, and submerged tunnels This comprehensive book covers important aspects of the required analysis and design of offshore structures and systems and the fundamental background material for offshore engineering. Whereas most of the books currently available in the field use traditional oil, gas, and ship industry examples in order to explain the fundamentals in offshore mechanics, this book uses more recent applications, including recent fixed-bottom and floating offshore platforms, ocean energy structures and systems such as wind turbines, wave energy converters, tidal turbines and hybrid marine platforms. *Offshore Mechanics* covers traditional and more recent methodologies used in offshore structure modelling (including SPH and hydroelasticity models). It also examines numerical techniques, including computational fluid dynamics and finite element method. Additionally, the book features easy-to-understand exercises and examples. Provides a comprehensive treatment for the case of recent applications in offshore mechanics for researchers and engineers Presents the subject of computational fluid dynamics (CFD) and finite element methods (FEM) along with the high fidelity numerical analysis of recent applications in offshore mechanics Offers insight into the philosophy and power of numerical simulations and an understanding of the mathematical nature of the fluid and structural dynamics with focus on offshore mechanic applications *Offshore Mechanics: Structural and Fluid Dynamics for Recent Applications* is an important book for graduate and senior undergraduate students in offshore engineering and for offshore engineers and researchers in the offshore industry.

Design and Analysis of Tall and Complex Structures Apr 28 2020 The design of tall buildings and complex structures involves challenging activities, including: scheme design, modelling, structural analysis and detailed design. This book provides structural designers with a systematic approach to anticipate and solve issues for tall buildings and complex structures. This book begins with a clear and rigorous exposition of theories behind designing tall buildings. After this is an explanation of basic issues encountered in the design process. This is followed by chapters concerning the design and analysis of tall building with different lateral stability systems, such as MRF, shear wall, core, outrigger, bracing, tube system, diagrid system and mega frame. The final three chapters explain the design principles and analysis methods for complex and special structures. With this book, researchers and designers will find a valuable reference on topics such as tall building systems, structure with complex geometry, Tensegrity structures, membrane structures and offshore structures. Numerous worked-through examples of existing prestigious projects around the world (such as Jeddah Tower, Shanghai Tower, and Petronas Tower etc.) are provided to assist the reader's understanding of the topics. • Provides the latest modelling methods in design such as BIM and Parametric Modelling technique. • Detailed

explanations of widely used programs in current design practice, such as SAP2000, ETABS, ANSYS, and Rhino. • Modelling case studies for all types of tall buildings and complex structures, such as: Buttressed Core system, diagrid system, Tube system, Tensile structures and offshore structures etc.

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